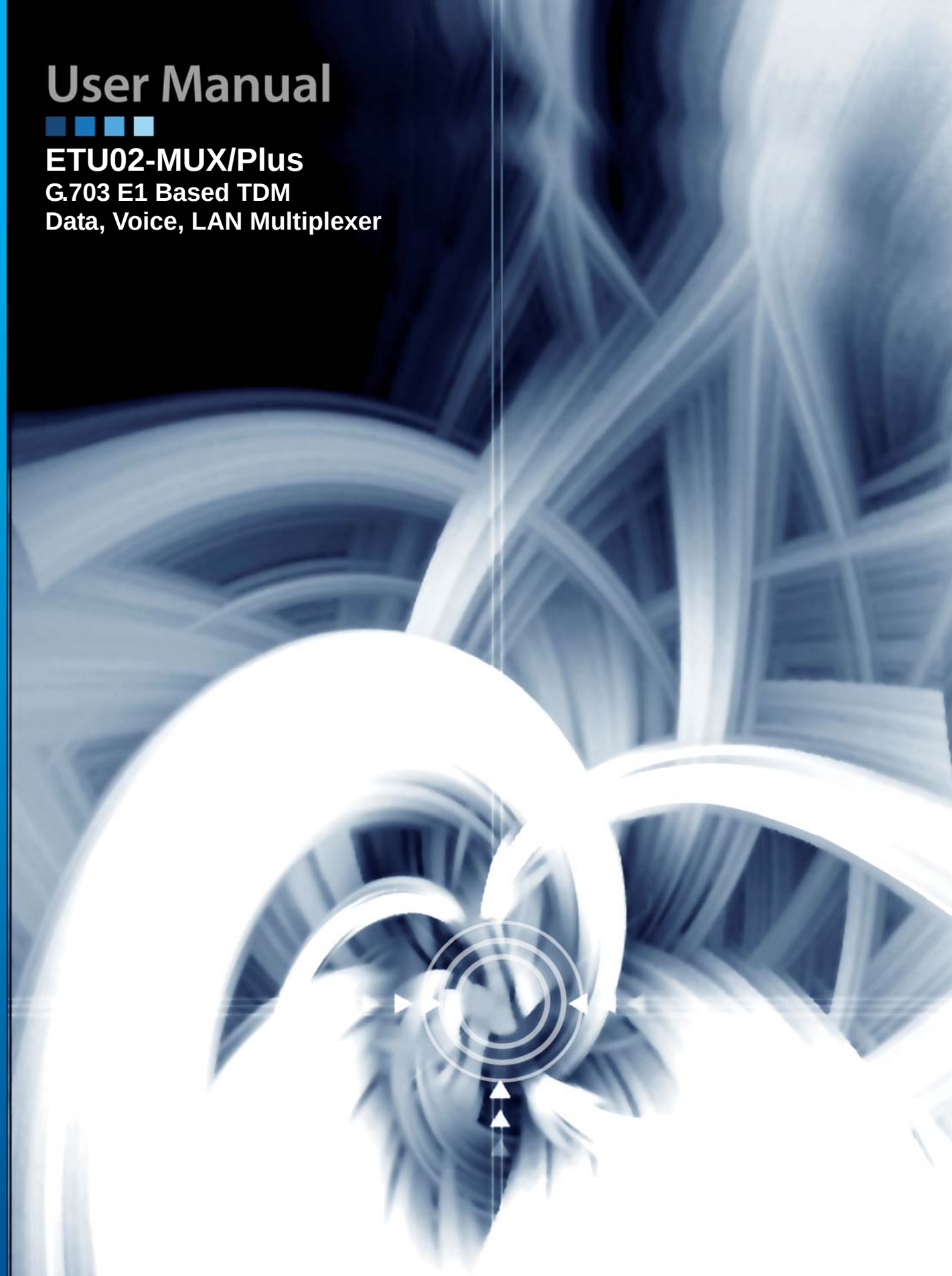
User Manual

ETU02-MUX/Plus

G.703 E1 Based TDM
Data, Voice, LAN Multiplexer



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ETU02-MUX/Plus User Manual

G.703 E1 TDM Multiplexer

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CE

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Table of Contents

1. Introduction 7
1.1 Brief Introduction of the Product 7
1.2 Functional Characteristics 7
1.3 Technical Indicators 8
1.4 Typical Application of the Product 11
2.1 Description of the Chassis 12
2.2 Introduction of Interface Modules 13
3. Installation 18
3.1 Installation of the Machine Frame onto the Chassis or Cabinet 18
3.2 Inserting of Various Cards into Corresponding Slots 18
3.3 Connection of the Power Supply 18
3.4 Connection of the Interface at the Monitor Terminal 18
3.5 Connection Interface of E1 Line 19
3.6 Connection Interface of the Back Panel of the IO Card 19
4. Provisioning 21
4.1 Preparation 21
4.2 Setup of E1 Link 24
4.3 Setup of the I/O Card 29
4.4 Setup Parameters and Status of the Display System 47
4.5 Storage and Collocation of the Device Parameters 51
4.6 Recovery of the Default Value of the Device 52
4.7 Browsing/Modification of the Equipment System Parameters 52
4.8 Exit from the Menu and Entry into the Monitor Mode 57
4.9 Introduction of Event and Alarm Classification 57
5. Diagnostics 58
5.1 E1 Port 58
5.2 Interface of N64K-V.35/RS232/G703/64K Module 58
5.3 Interface of ET100 Module 59
5.4 Interface of FXS/FXO/E&M Module 59
Annex A: Setup of DIP Switch 60
Annex B: I/O Card Cable Interface Pin Assignments 64

1. Introduction

1.1 Brief Introduction of the Product

ETU02-MUX/Plus is a kind of time division multiplexers that makes the multiplexing of data and voice signal to E1 circuit. The multiplex function with many kinds of service and many rates can make the multiplexing of 1 to 12 N×64K and 19.2K/38.4K/64K/128K synchronous data, ≤38.4K asynchronous data, G703/64K signal, Ethernet data, voice service and the signal of sub E1 channel to one E1 circuit, transmit the signals of high speed data, conference television and voice etc., realize the link between the hosts and the link of the host with the computer, LAN, the telephone exchange, the user telephone and the device of the equipment etc., provide the data channels designed for the satellite channels or the transparent channels without clock, and provide several transparent 9.6k/19.2k BPS channels. The device is provided with perfect status and alarm indication and it supports remote network management inside/outside the band of SNMP.

1.2 Functional Characteristics

The uplink interface provides E1 interface and belongs to replaceable card plug-in mode. Two E1 links, namely main E1 and sub E1 (SUB E1), provide two E1 uplink modules, namely single E1 uplink module and double E1 uplink module with sub E1 for the user to make own selection according to own need for the application. Main E1 can be set as PCM30 or PCM31 framing format and the user can allocate the time slots at will. Various E1 clock sources, internal timing, the timing of receiving recovery and the timing at the data following port (excluding the voice port and Ethernet interface) provide maximum adaptability for E1 and user interface. The channel rate and the maximum rate that can be selected by the user are N×64kb/s and 1984kb/s.

7 kinds of replaceable user modules:

N64K-V35 module: Provision of two V.35, RS-530, X21 and RS449 interface standards;

RS-232 module: Support to four synchronous modes/asynchronous modes/independent clock modes with RS232 interfaces;

G703/64K module: Support to two G703/64K co-directional interfaces;

ET100 module: Provision of two 10/100Base-T Bridge interfaces;

FXS voice module: Provision of four FXS interfaces;

FXO voice module: Provision of 4 FXO interfaces;

E&M module: Provision of four E&M voice/signaling interfaces.

Perfect E1 circuit monitoring, alarm indication and shunt circuit interface connection identification function: The front panel is provided with LED indication, including power supply indication, the alarm indication of the complete machine, and the operating indication of all user ports, and the network management software provides detailed device operation status and alarm information. The user can configure the device, diagnosis testing and monitoring equipment operation status simply and conveniently. The device provides the management of local console port menu and the remote SNMP network management can support the graphical interface management. 19in 1U structure can be installed on the chassis or be placed on the desk.

1.3 Technical Indicators

Main E1 and Sub E1

Interface: Balanced (RJ45) interface and unbalanced (BNC) interface (the double E1 module with Sub E1 provides unbalanced BNC interface only)

Frame structure: CCS (PCM31)/CAS (PCM30)

CRC4 ON /CRC4 OFF

Bit rate: 2.048 Mb/s

Line code pattern: AMI/HDB3

Line impedance: 75Ω (unbalanced) and 120Ω (balanced)

Range of the receiving level: 0 ~ -43dB

Pulse amplitude: 2.37V±10% (nominal at 75Ω)

3.00V±10% (nominal at 120Ω)

0 amplitude: ±0.1V

Transmit frequency tracking: ±30ppm (internal timing)

±50ppm (recovery timing)

±100ppm (external timing)

Jitter performance: Meets ITU G.823

User modules

Cabinet supported modules: 3

N64K-V35 module: Every module supports 2 user data channels

Interface: V35, RS530, X21 and RS449

Data rate: N×64K (N=1～31)

The first external clock can provide E1 clock source.

RS-232 module: Every module supports four user data channels

Interface: RS232

Data rate: ≤38.4K (asynchronous)

19.2K/38.4K/64K/128K (synchronous)

9.6K/19.2K (synchronous) in the independent external clock mode

The first external clock can provide the system clock source. It should be noted that no multi-clock mode can be provided.

The independent external clock mode of the user data channel can be provided.

When the independent external clock mode is selected, every circuit can adopt the synchronization mode with independent external clock.

G703/64K module:

Every module supports two user data channels

Interface type: 64Kbps co-directional interface

Rate: 64Kbps±100ppm

Line: 4 lines with the diameter between 0.5mm and 0.7mm, twisted pair line or cable

Transmission distance: Less than 600m with the diameter between 0.5mm and 0.7mm

Impedance: 120Ω (balanced)

Standard: CCITTG703 and G823

Frame format: Non-framing

Line coding: CCITTG703-64K and the coding rules for the co-direction

ET100 module:

Every module supports two user data channels

Interface: RJ45

LAN:

Data rate: 10/100Mbps (full duplex or half-duplex)

Supporting IEEE802.3X flow control

Automatically identification of the line

256 MAC address filtering list, and automatic address update

Up to 340 package buffers

WAN: Support to synchronous HDLC rules

Rate is distributed according to the need of the user.

FXS module:

Every module supports four telephone channels.

Interface: RJ45

Technical indicators of the remote (FXS) connecting line:

Voice interface impedance: 600 ohms

Level gain:

The level gain at the side of TX (upper interface transmission side) is +0dB.

The level gain at the side of RX (upper interface receiving side) is -3.5dB.

The effective value of the ring current output is 75±15V and the frequency is 25±3Hz.

The feeding voltage is -48V and the maximum user loop resistance is 1,800Ω.

Supports to 4km long connecting line loop with the linear diameter of 0.4mm

Feeding working current: 20mA

FXO module:

Every module supports four telephone channels.

Interface: RJ45

Technical indicators of the connecting line at the terminal (FXO):

Voice interface impedance: 600 ohms

Level gain:

The level gain at the side of TX (upper interface transmission side) is +0dB.

The level gain at the side of RX (upper interface receiving side) is +3.5dB.

Ring current impedance is not less than 7.5kΩ.

The direct current resistance in the off-hook condition is not more than 300Ω.

The maximum direct current borne by the interface is not less than 70V.

E&M module:

Every module supports four voice/signaling channels.

Interface: RJ45

Signaling:

Circuit E/Circuit M are used as the inter-office signaling of the control circuit interface transmission;

Provision of Circuit E and Circuit M and necessary SB (battery) and SG (ground) lines;

Range of the ring current: 5~30mA and 70mA at most;

Every E&M channel can independently provide five signaling modes from Type 1 to Type 5.

Voice transmission

Voice interface impedance: 600 ohms

Two-circuit or four-circuit working mode can be independently set through the switch on the card.

Range of the level set through programming:

The level value at the middle point at the side of TX is +5dB and the range is±7.5dB.

The level value at the middle point of the four circuits at the side of RX (upper interface receiving side) is -5dB and the range is±7.5dB.

The level value at the middle point of the two circuits at the side of RX (upper interface receiving side) -8dB and the range is±7.5dB.

The set defaults:

The level gain value at the side of TX: 0dB (set as 5dB in the attenuation mode in the menu);

The level gain value at the side of RX: 0dB for four circuits and -3dB for two circuits (set as 5dB in the gain mode in the menu);

The adjustment of the audio level gain can be independently changed at every interface and the stepping is 0.5dB and can be set through programs.

Maximum signal limit of the output at the side of TX: +3dB；

E1 circuit clock:

The recovery clock of Main E1 (Main E1);
The recovery clock of Sub E1 (Sub E1);
Internal crystal clock;
IO card block: It is provided by the specified through the CH1 data port of the Model N slot and the IO card supporting this function includes N64K-V35 card and RS-232 card.

Setup/configuration:

Setup of the asynchronous terminal: RS232 (DB9)
SNMP network management: RJ45 and remote SNMP network management is provided.

Diagnosis testing

Test loop: The local loop and remote loop of Main E1, the local loop and remote loop of Sub E1, and the local loop and remote loop of the user channel

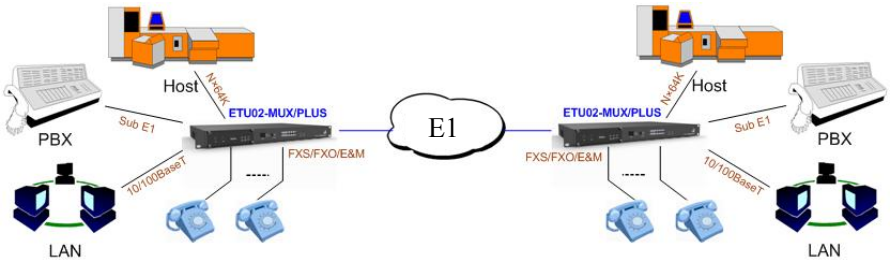
Others:

Physical dimensions: 44mm (height), 430mm (width), 280mm (depth), 3.5kg (weight)

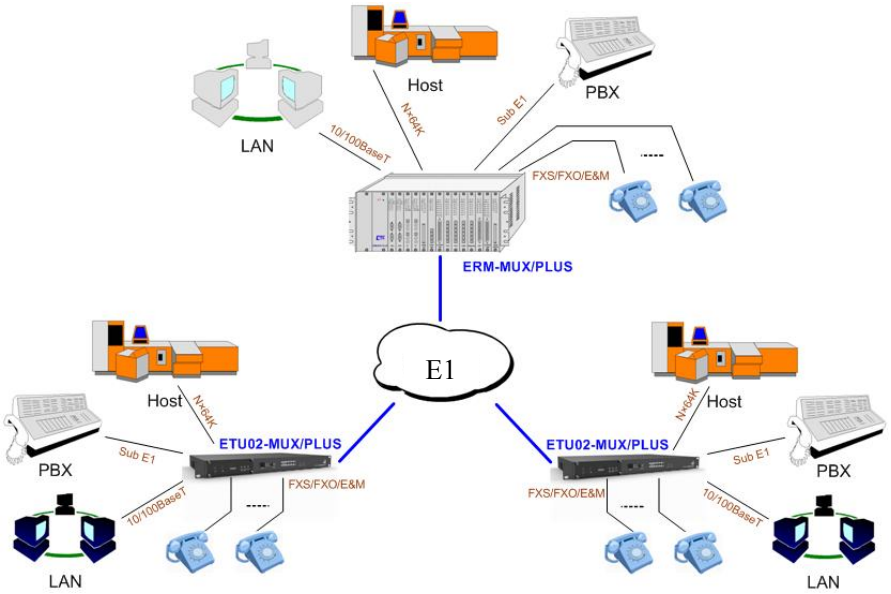
Power supply: AC: 90～250VAC and 47～63Hz or -40V～-57V -48VDC, power 15W

Ambient: temperature 0～50℃, humidity 0～90% without condensation

1.4 Typical Application of the Product



Application of point-to-point connection



Application of the star network composed of ERM-MUX/PLUS and *ETU02-MUX/Plus*

2. Chassis and Interface Modules

2.1 Description of the Chassis

19" 1U standard cabinet can be adopted and it can be placed on desk or installed in a rack. The power supply can be 220V/110VAC or -48VDC.

2.1.1 Introduction of the Front Panel

The uplink interface module slot is at the left side of the front of the cabinet (as shown in figure 2.1) and the single E1 module or the double E1 module with Sub E1 can be used. See Introduction of Interface Module for the details of the module.

Figure 2.1 Sketch map of the front panel of ***ETU02-MUX/Plus***

The SNMP network management interface at the middle is a RJ45 interface. The locally configured interface console adopts DB9 interface. See Section 3.4 for the map of the pin-out positions and see Chapter 4 Setup of the Monitoring Menu for the detailed steps of the device layout and monitoring through the console port. (See the Operation Manual of SNMP Network Management for the detailed operation of SNMP network management)
Description of the indicator lights on the front panel:

Indicator light		Color	Description
Power		Green	The lighting expresses that the power supply is on.
Alarm		Red	The lighting expresses that there is a failure.
Module1: 1-4		Green	The lighting expresses that Route N (N=1-4) of the module is in work.
Module2: 1-4		Green	The lighting expresses that Route N (N=1-4) of the module is in work.
Module3: 1-4		Green	The lighting expresses that Route N (N=1-4) of the module is in work.
SNMP	Link	Yellow	The lighting expresses that the Ethernet port has been connected.
	Active	Green	The coruscation expresses that data are being transmitted.

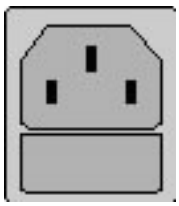
Note: When G703/64K card is used, the indicator light only expresses the signal state of G703/64K channel. The lighting expresses that there are signals and the extinguishing of the light expresses that there is no signal.

2.1.2 Introduction of the Back Panel

The power supply socket and switch is at the left side on the back panel of the cabinet. There are three slots of Module 1, Module 2 and Module 3 from left to right where the user can plug all kinds of user modules at will.

Figure 2.2 Sketch map of the back panel of ***ETU02-MUX/Plus***

The 220VAC power supply is as shown in the following figure.



Right: AC live conductor

Left: AC sero conductor

Middle: Ground wire of the casing

Figure 2.3 Sketch map of the AC power supply socket

The -48VDC is as shown in the following figure, of which FG is the ground wire of the casing.

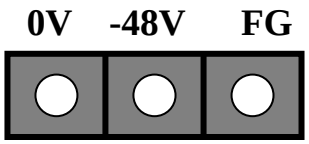


Figure 2.4 Sketch map of the DC power supply socket

2.2 Introduction of Interface Modules

2.2.1 Single E1 Uplink Module

The single E1 uplink module provides balanced (RJ45) and unbalanced (BNC) E1 interfaces. The E1 card provides corresponding E1 status indicator lights, including Signal Loss, Sync Loss and Alarm and supports the multiplexing of data and voice at the same time.

Description of the indicator lights on the module:

Signal Loss Red, the lighting expresses that the E1 circuit is provided with no signal;

Sync Loss Red, the lighting expresses that the E1 circuit frame is out of synchronous;

Alarm Red, the lighting expresses that the E1 module gives an alarm.

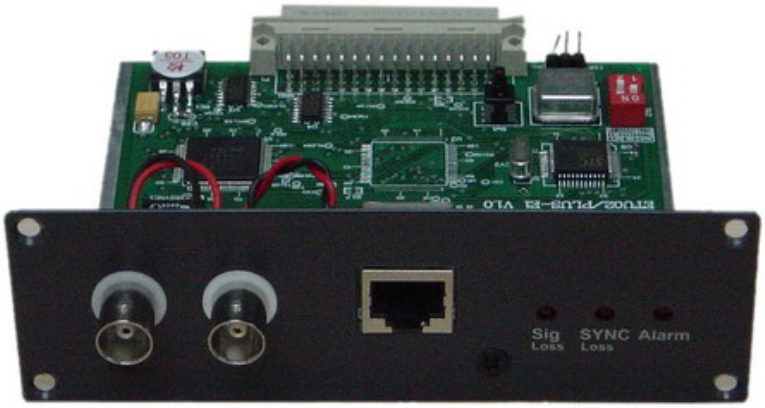


Figure 2.5 Single E1 card

2.2.2 Double E1 Uplink Module with Sub E1

The double E1 uplink module provides Main E1 and Sub E1 interfaces. E1 interface is an unbalanced (BNC) interface. The E1 card provides the status indicator light of every E1, including Signal Loss, Sync Loss and Alarm. Sub E1 uses the transmission bandwidth of Main E1 with the rate of N×64K (N=1～31) and supports the multiplexing of the data and voice service at the same time.

Description of the indicator lights on the module:
Signal Loss Red, the lighting expresses that the E1 circuit is provided with no signal;
Sync Loss Red, the lighting expresses that the E1 circuit frame is out of synchronous;
Alarm Red，the lighting expresses that the E1 module gives an alarm.

Figure 2.6 Double E1 card

2.2.3 N64K-V.35 Module

Every N64K-V.35 module is provided with a data port connector to support 2 high speed data interfaces.
The interface uses the SCSI 68 female connector and makes the switchover with “Y” shape cable. Every module interface is the DB25 female connector and is the interface standards of V.35, RS530, X21 and RS449 etc. The interface belongs to DCE.
The selectable rate range of every interface is N×64K (N=1～31).

Figure 2.7 N64K-V.35 card

2.2.4 RS232 Module

Every RS-232 module is provided with a data port connector and supports four RS232 synchronous/asynchronous data interfaces. The interface uses the SCSI 68 female connector and makes the switchover with a 4-in-1 cable. Every module interface is the DB25 female connector, the interface belongs to DCE, and it is adequate for synchronous transmission and asynchronous transmission at the same time. In the normal user application mode, the selectable range of the interface data rate is ≤38.4K for asynchronous and 19.2K/38.4K/64K/128K for synchronous mode. In the transparent work mode, every RS232 port can provide independent clock or provide no clock and the selectable range of the data rate at the interface is ≤38.4K for asynchronous and 9.6K/19.2K for transparent or synchronous mode.

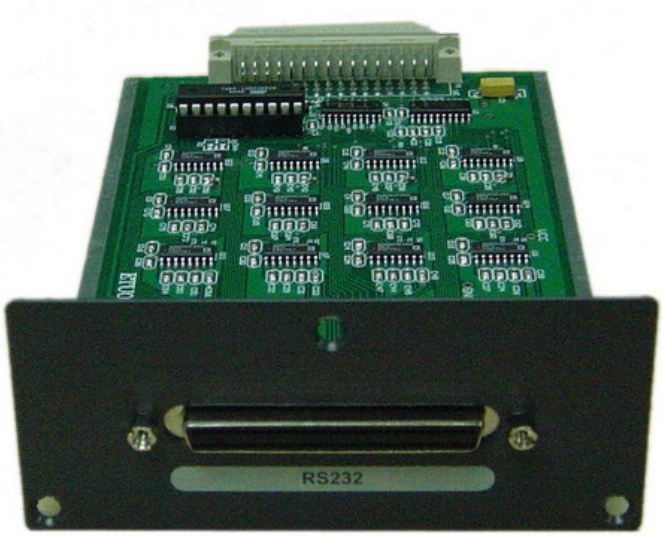


Figure 2.8 RS232 card

2.2.5 ET100 Module

Every ET100 module is provided with 2 RJ45 Ethernet interfaces and supports the connection with two lines of 10/100M Ethernet. Every port on the back panel is provided with the link status indicator lights. The lighting expresses that the link is on and the extinguishing of the light expresses that the link is off. The Ethernet port supports 802.3X flow control and is provided with MAC address filtering function. The list of the 256 addresses can be automatically updated within 5 minutes and transmission bandwidth of WAN can be saved through the check of the MAC addresses of the data package and the filtration of the data package transmitted to the local. The port is provided with Auto-MDIX function and the line is provided with self application function.

Figure 2.9 ET100 card

2.2.6 FXS Voice Module

Every FXS voice module is provided with four RJ45 voice interfaces and supports 4 lines of voices. Every module is provided with four FXS interfaces and can be connected with telephones. Through FXS interfaces, the module can be connected with the external lines of the telephones at the FXO interfaces of the remote device (in normal mode) and can be also connected with the hot lines of the telephones at the FXS interfaces of the opposing party (in hot line mode).

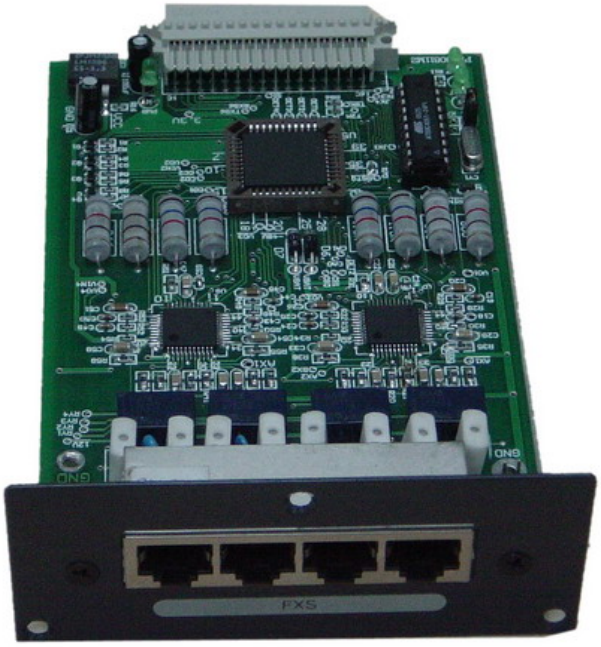


Figure 2.10 FXS card

2.27 FXO Voice Module

Every FXO voice module is provided with four RJ45 voice interfaces and supports 4 lines of voice. Every module is provided with four FXO interfaces to connect the external lines of PBX (exchange). Through the FXO interfaces, the module can be connected with the telephones at the FXS interfaces of the remote device.

Figure 2.11 FXO card

2.2.8 E&M Voice Module

Every E&M voice module is provided with four RJ45 voice interfaces and supports 4 lines of voice. Every module is provided with four E&M interfaces to provide 600 ohms two-line/four-line voice transmission and E&M signaling interfaces (Type 1–Type 5).

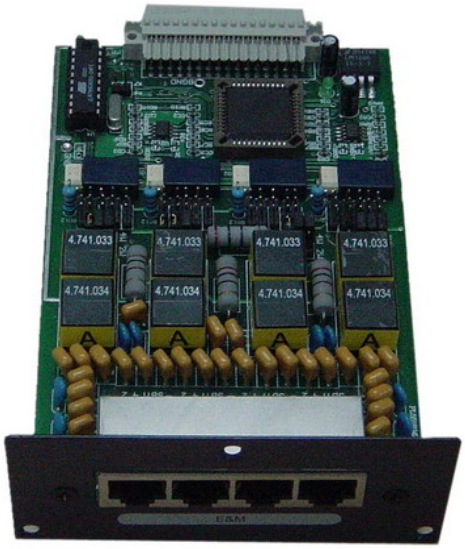


Figure 2.12 E&M card

2.2.9 G703/64K Module

Every G703/64K card is provided with two RJ45 interfaces and supports two G703/64K channels. The interface type of the module belongs to 64Kbps co-directional interface complying with the coding rules for ITU-T G.703-64K co-directional interface, the rate of the interface is 64Kbps±100ppm, and the transmission distance through the cable with the diameter between 0.5mm and 0.7mm is 600m.

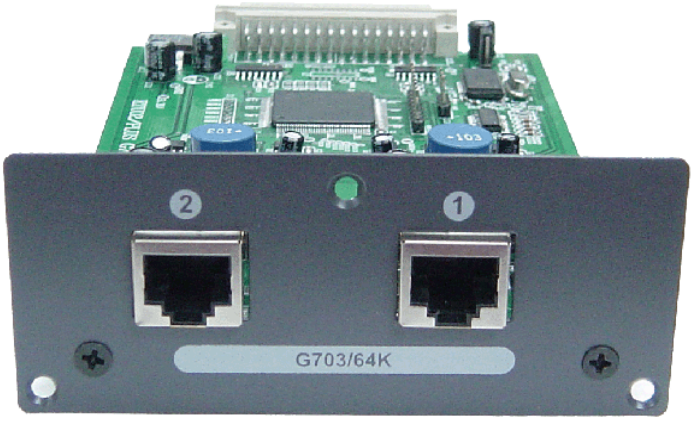


Figure 2.13 G703/64K card

3. Installation

Figure 3.1 Appearance of ***ETU02-MUX/Plus***

3.1 Installation of the Machine Frame onto the Chassis or Cabinet

Through the adjustment of the adapter brackets at the sides of the machine frame, the machine frame can be installed on the 19" chassis or the cabinet. The position of the brackets installed at the sides of the machine frame are shown in figure 3.2.

Figure 3.2 Installation of the Rack mounting brackets (top view)

3.2 Inserting of Various Cards into Corresponding Slots

Insert the selected E1 card into the E1 slot on the front panel. Insert the selected I/O plug-in cards into the Model 1, Model 2 and Model 3 slot on the back panel and the types of the IO cards can be combined at will.

3.3 Connection of the Power Supply

The user can select and use 220VAC or -48VDC power supply. It should be noted that the DC back panel is different from the AC back panel and see Section 2.1.2 Introduction of the Back Panel.

3.4 Connection of the Interface at the Monitor Terminal

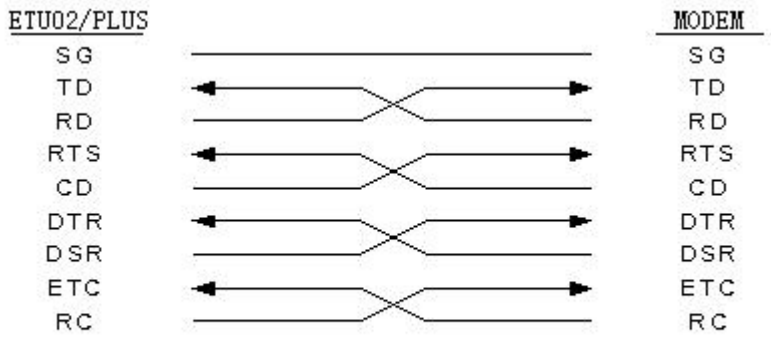
The DB9 straight-through cable supplied with the device is used to realize the connection between PC and the console port on the front panel. The signal mode is RS232, the baud rate is 9,600bps, there are 8 data bits and 1 stop bit, and there is no parity check and flow control.

3.5 Connection Interface of E1 Line

The E1 is provided with balanced interface and unbalanced interface respectively introduced through the front panel (see figure 2.5 and figure 2.6).

3.6 Connection Interface of the Back Panel of the IO Card

The cable connections at various IO ports are different, but they are all introduced through the back panel. See Annex B for the list of various cables and see figure 3.3, figure 3.4 and figure 3.5 for the connection of the cross cables at the data interfaces.



Note: No DTR, DSR, ETC or RC are used when in asynchronous mode

Figure 3.3 Cross-cable for RS-232

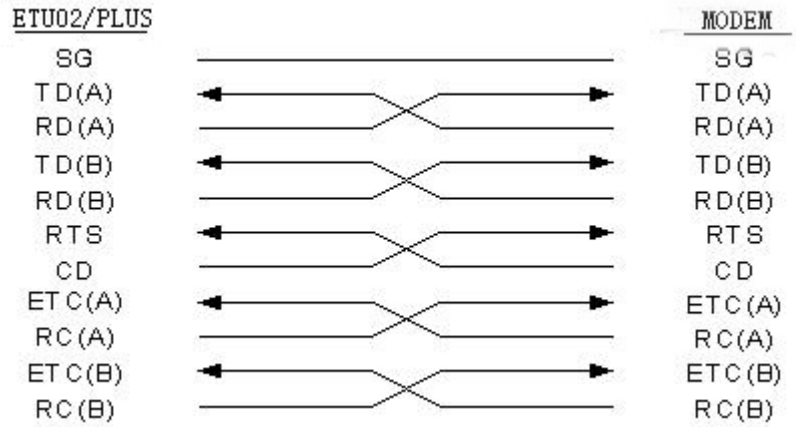


Figure 3.4 Cross-cable for V.35

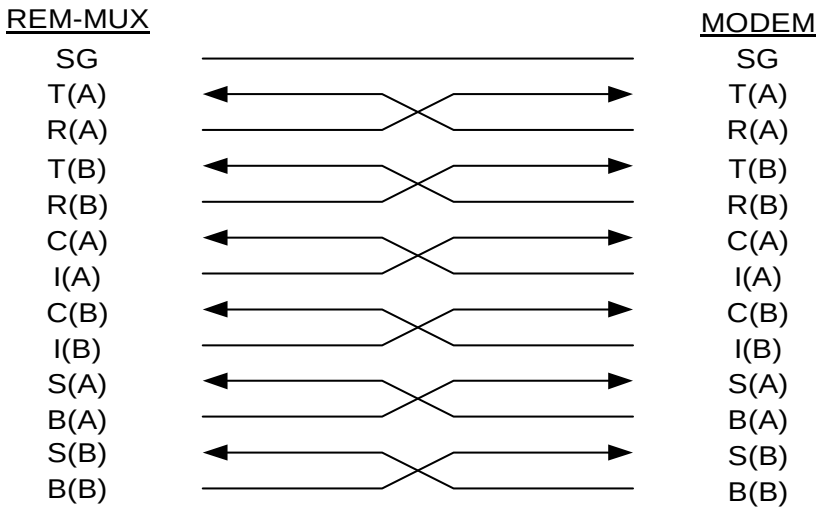


Figure 3.5 Cross-cable for X.21

4. Provisioning

This chapter shall introduce how ***ETU02-MUX/Plus*** is configured with E1 circuit (monitor terminal).

4.1 Preparation

Before setup, DB9 straight-through serial-port line is used to connect the E1 circuit (monitor terminal) interface of ***ETU02-MUX/Plus*** with the standard terminal or emulation terminal (for example, the hyper terminal card of the PC). The parameters of the serial port: the baud rate is 9,600bps, there are 8 data bits and 1 stop bit, and there are no parity checks and flow control.

4.1.1 Startup

The startup menu is as follows: The system card firstly gives the information of all slots after retrial, the prompt of the first startup is displayed provided that the system is started up for the first time, then the system is initialized, and the current system parameters in the memory is called out to set up the system provided that the system was set up last time. The prompt is as follows:

Initializing, please wait …

Start configure …

If the setup is successful, the prompt that the E1 is successfully set up and IO slot is successfully set up (XXX SET OK! It indicates that the corresponding slot position and card are successfully set up). The interface is as shown in the following figure:

```
Current version is 1.05
Self checking….
FPGA TEST OK!        //FPGA self-check successful
System Worked for the Independent Clock Mode!  //the current work mode of the system (see the note)
RAM TEST OK!         //RAM testing self-check successful
//If FPGA or RAM test fails, the display is as follows:
FPGA TEST ERR!
RAM TEST ERR!
Today is a bright day!
E1 Card is 2*E1         //the type of the E1 card
Slot1 is ET100          //the card type in Slot 1
Slot2 is N64K           //the card type in Slot 2
Slot3 is RS232          //the card type in Slot 3
Initializing, please wait.....  //prompting the initializing and please wait!
Start configure,    //the start of the parameter configuration of the system
E1 SET OK!          //means that E1 is successfully set up.
SLOT1 SET OK!       //means that Slot 1 is successfully set up.
SLOT2 SET OK!       //means that Slot 2 is successfully set up.
SLOT3 SET OK!       //means that Slot 3 is successfully set up.
Press ESC to enter the MENU   //the parameter information can be browsed after
                    pressing ESC and the previous menu can be entered. In order to
                    meet the different demands of the users, press any key but ESC
                    in the current menu to skip over the display interface and prompt
                    the user to input the password of the system.
```

Note:

The low speed RS 232 card corresponds with two work modes, namely normal work mode and independent external clock mode. In normal work mode, the prompt of the work mode after startup is as follows:
System Worked for the Normal Mode!
The prompt of the work in independent external clock mode is as follows:
System Worked for the Independent Clock Mode!

4.1.2 Startup Display System and IO Card Setup Parameters and Status Information

The startup menu prompts the pressing of ESC to enter into the menu. In current menu, press ESC to pop up the configuration parameters and status information of all cards, and then prompt the input of the system password to enter into the previous menu. In this case, it is displayed that the system clock is the main link recovery clock without network management, the type, status and work mode of E1 are displayed in turn, then the setup information and the link synchronizing information of Main E1, the setup information of Sub E1, the link synchronizing information and the work time slot of Sub E1 are displayed respectively, the type and work status of the IO card at every slot position are displayed in turn from Slot 1, and the setup information, line status and data activation of every channel are displayed respectively. The meaning of every character string shall be detailed in the IO card setup and status analysis.

The menu is as follows:

```
System Parameter: Main E1 Recovery CLK, NO Nmp //displaying the system parameters
                                               (system clock and network management)
E1 Link 2*E1 STATUS: Normal                    //the type and status of E1 card
WorkMode: Sub E1                               //the work mode of E1 card
***Main E1***                                  //the setup parameters and link information
                                               of Main E1
Parameter: CCS&Ts0 Pass Disable, CRC4 Disable, NO Loop, HDB3, -12dB, 75 Ohm, 128Bit
Status: Signal Loss, Frame Loss, Remote Frame Loss, AIS Normal
***Sub E1***                                   //the setup information and link information
                                               of Sub E1
Parameter: CCS&Ts0 Pass Disable, CRC4 Disable, NO Loop, HDB3, -12dB, 75 Ohm, 128Bit
Status: Signal Loss, Frame Loss, Remote Frame Loss, AIS Normal
SubE1 Timeslot: NULL                           //the work time slot of Sub E1
SLOT1 ET100 STATUS: Normal                      //the type and work status of the IO card
                                                at Slot 1
CH1: NULL, Aneg Enable, Full Duplex, 100M, Flowctrl Disable, MAC Filter Enable, NO
                                               Loop
Link OFF, Data Free
CH2: NULL, Aneg Enable, Full Duplex, 100M, Flowctrl Disable, MAC Filter Enable, NO
                                               Loop
Link OFF, Data Free
SLOT2 N64K/V.35 STATUS: Normal                  //the type and work status of the IO card
                                                at Slot 2
CH1: NULL, Internal CLK, NO Loop, DTR OFF, RTS OFF, Data Free
CH2: NULL, Internal CLK, NO Loop, DTR OFF, RTS OFF, Data Free
SLOT3 RS232 STATUS: Normal                      //the type and work status of the IO card
                                                at Slot 1
CH1: NULL, Internal CLK, NO Loop, Async19.2K and Below, DTR OFF, RTS OFF, Data Free
CH2: NULL, Internal CLK, NO Loop, Async19.2K and Below, DTR OFF, RTS OFF, Data Free
CH3: NULL, Internal CLK, NO Loop, Async19.2K and Below, DTR OFF, RTS OFF, Data Free
CH4: NULL, Internal CLK, NO Loop, Async19.2K and Below, DTR OFF, RTS OFF, Data Free
Press any key to continue
```

4.1.3 Input of the Startup Password

The system displays:

Please input your password:

After inputting the password according to the prompt of the system, the user needs to input the password of the system and then can enter into the previous menu to make the operation of the correction, default and reconfiguration etc. of the parameters and observe the status and data activation information of the IO card at every slot. The defaulted original password of the system is 111111. The user can correct the password in the system menu after inputting the password and entering into the previous menu to make the password comply with own habit. The password must be a 6-bit character combined with any letter (A-Z or a-z) and any number (0-9). If being wrongly input, the password can be input again. The system displays every input in the form of * and the input can be cancelled by pressing ESC or the key of "Backspace".

4.1.4 Display of the Previous Menu

```
Hello! Welcome you!
Current version is 1.05
<<MAIN MENU>>
1. E1 Link Configure      //E1 link parameters browsing/correction menu
2. IO Link Configure      //IO slot link parameters browsing/correction menu
3. Display Parameter      //displaying system setup parameters and status menu
4. Save Parameter      //saving and setup device parameters menu
5. Set Default         //default device initial value menu
6. Set System          //device system parameters browsing/correction menu
0. Exit                //exit from the menu
Please input your choice:
```

Print the welcome words and current firmware version number firstly and then print the previous menu that includes following 8 sub-menus:

E1 link parameters browsing/correction menu: Include the work mode selection of Main E1 and Sub E1 on E1, the selection of the work setup parameters of Main E1 and Sub E1 (framing mode, line impedance, interface level, line coding, and the jittering attenuation FIFO length of the line etc.), and the selection of the work time slot of Sub E1.

IO slot link parameters browsing/correction menu: Search all existing IO cards and then select the time slot, work mode and the gain and attenuation of every channel according to the type of the card. According to different types of the cards, the options and ranges are also different (see the setup of every IO card for the details).

Displaying system setup parameters and status menu: The displayed information is consistent with the information displayed after startup, including the setup information, status information and data activation information of E1 link and IO cards. After the displaying is completed, the previous menu is backed to.

Saving and setup device parameters menu: Save E1 link configuration, IO slot link configuration, system clock parameters setup and the BERT configuration parameters of E1 into the memory of the system. All data can be saved when the power is down. The saved parameters exclude password and the date and time of the system that are saved immediately after the correction becomes effective.

Default device initial value menu: Resume the system parameters back to the default. The default range excludes the work mode of E1 (single E1 mode or Sub E1 mode), NMP mode and SNMP setup parameters, device address, network management time slot and the password, date and time of the system. Other setup parameters relating to E1, BERT parameters of E1 and the parameters of the IO cards are all resumed back to the default. The default information is detailed in the independent setup of every card.

In the **system setup** menu, the current system firmware version can be viewed, the system clock can be set, NMP mode and correlative parameters can be set, system password can be changed, and the date and time of the system can be configured and displayed.

Exit from the menu: Select the exit from the previous menu and enter into the monitoring state.

Key in any key from 1 to 6 and press the key Enter to enter into corresponding sub-menus.

Key in 0 and press the key Enter or press the key ESC to back to the monitoring state. It is prompted whether the menu is exited.

4.2 Setup of E1 Link

In the previous menu, key in 1 and press the key Enter to enter into the setup of E1 link. The menu is displayed as follows:

```
<<E1 Link Configure>>
1. Work MODE        //E1 card work mode setup menu
2. Main Link        //Main E1 link parameters setup
3. Sub Link            //Sub E1 link parameters setup
0. Exit                //exit from the menu
Please input your choice:
```

If the single E1 or double-E1 card is in single E1 work mode, the screen displays the sub-menu Sub E1 link parameters setup. If double-E1 is in sub E1 mode, the above menu is displayed.
The setup content of the sub-menu is as follows:
Selection of E1 work mode: The single E1 card is provided with only one work mode, namely single E1 work mode. The double-E1 card is provided with the two selections of single E1 work mode and Sub E1 work mode. The work mode selected at present is expressed with the symbol * before.
Selection of Main E1 link setup: Include the browsing/correction sub-menu of Main E1 framing mode, line impedance, interface level, line coding, and jittering attenuation FIFO length of the line etc.
Selection of Sub E1 link: Include the browsing/correction sub-menu of Sub E1 framing mode, line impedance, interface level, line coding, and the jittering attenuation FIFO length of the line etc.
Key in any key from 1 to 3 and press the key Enter to enter into corresponding sub-menus.
Key in 0 and press the key Enter or ESC to back to the previous menu.

4.2.1 Selection of the Operation Mode of E1

Key in 1 in E1 link setup menu and press the key Enter to enter into the selection of E1 work mode and the following menu pops out:

```
<<E1 WORKMODE SETTING>>
1. Single E1 Mode          //single E1 work mode
*2. Sub E1 Mode            //Sub E1 work mode
0. Exit                    //exit
Please input your choice:
```

The current E1 work mode can be browsed and the work mode effectively selected at present is expressed with the symbol of * before.
Key in the effective number (1 or 2), and then press the 'Enter' key to redisplay the menu. The position of the symbol * changes, along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).
Pointer: If it is a single E1 card, there is only single E1 mode option.

4.2.2 Browsing/Modification of the Setup Parameters of Main E1

Key in 2 in E1 link setup menu and press the key Enter to enter into the browsing/correction of Main E1 setup parameters and the following menu pops out:

```
<<Main LINK SETTING>>
1. Frame/TS0 Pass      //Main E1 framing mode browsing/correction menu
2. CRC-4           //Main E1 frame CRC4 checking browsing/correction menu
3. LoopBack        //Main E1 loop mode browsing/correction menu
4. Impendance          //Main E1 line impedance mode browsing/correction menu
5. Line Code       //Main E1 line coding mode browsing/correction menu
6. RXZ          //Main E1 receive equalizer gain level browsing/correction menu
7. Jitter          //Main E1 jitter attenuation buffer area depth
 browsing/correction menu
0. Exit                //exit from the menu
Please input your choice:
```

The setup content of the sub-menu is as follows:
Main E1 framing mode browsing/correction menu: The framing modes that can be selected include CCS framing mode, CAS framing mode, CCS framing mode and 0 time slot unvarnished transmission work, CAS framing mode and 0 time slot unvarnished transmission work.. (Note: no non-framing work mode for ***ETU02-MUX/Plus*** E1 link)
Main E1 frame CRC4 checking browsing/correction menu: CRC4 checking ban or allowance can be selected.
Main E1 loop mode browsing/correction menu: The options of no loop, E1 local loop and to-E1/to-opposite terminal loop can be selected to facilitate the diagnosis testing, among which the "no loop" is used in the normal work mode.
Main E1 line impedance mode browsing/correction menu: Two kinds of line impedance matching modes can be selected for the application in 75Ω unbalanced coaxial cable and 120Ω balanced twisted pair line respectively.
Main E1 line coding mode browsing/correction menu: Two kinds of line coding modes can be selected, namely HDB3 coding and AMI and coding.
Main E1 receive equalizer gain level browsing/correction menu: Two kinds of line receive equalizer gain levels, namely -12dB and -43dB, can be selected for short line and long line application.
Main E1 jitter attenuation buffer area depth browsing/correction menu: Two kinds of jitter attenuation buffer area depths, namely 128bits and 32bits, can be selected. The former is used for most occasions and the later is used for the occasions that are extremely sensitive to time delay.
Key in any key from 1 to 7 and press the key Enter to enter into corresponding sub-menus.
Key in 0 and press the key Enter or press ESC to back to the previous menu.

4.2.2.1 Browsing/Modification of the Framing Mode of Main E1

Key in 1 in Main E1 link setup menu and press the key Enter to enter into the selection of the framing modes of Main E1 and the following menu pops out:

```
<<MainLINK Frame SETTING>>
*1. CCS            //CCS framing mode (PCM31)
2. CAS             //CAS framing mode (PCM30)
3. CCS+TS0 Pass    //CCS framing mode and 0 time slot transparent transmission
4. CAS+TS0 Pass    //CAS framing mode and 0 time slot transparent transmission
0. Exit                //exit
Please input your choice:
```

The current framing modes of Main E1 can be browsed and the framing mode effectively selected at present is provided with the symbol * before.
Key in the effectively selected number (1-4) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to the previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.2.2.2 Browsing/Modification of the CRC4 Verification Mode of Main E1

Key in 2 in the Main E1 link setup menu and press the key Enter to enter into the selection of Main E1 CRC4 checking mode and the following menu pops out:

```
<<MainLINK CRC4 SETTING>>
*1. OFF              //CRC4 checking ban
2.  ON               //CRC4 checking permitted
0.  Exit                 //exit
Please input your choice:
```

CRC4 checking mode if the current Main 4 can be browsed and the CRC4 checking mode effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.2.2.3 Browsing/Modification of the Loop Mode of Main E1

Key in 3 in Main E1 link setup menu and press the key Enter to enter into the selection of Main E1 loops and the following menu pops out:

```
<<MainLINK LoopBack SETTING>>
*1. NO LOOP              //No loop mode
2.  Local LOOP           //local loop mote
3.  TO Remote LOOP       //to remote loop mode
0.  Exit                 //exit
Please input your choice:
```

The current loop mode of Main E1 can be browsed and the loop mode effectively selected at present is provided with the symbol * before.
Key in the effectively selected number (1-3) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.2.2.4 Browsing/Modification of the Line Impedance of Main E1

Key in 4 in the Main E1 link setup menu and press the key Enter to enter into the selection of Main E1 line impedance mode and the following menu pops out:

```
<<MainLINK Impendance SETTING>>
*1. 75 Ohm           //75 ohms BNC unbalanced interface mode
2.  120 Ohm          //120 ohms balanced twisted pair line interface mode
0.  Exit             //exit
Please input your choice:
```

The current line impedance mode of Main E1 can be browsed and the line impedance mode effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.2.2.6 Browsing/Modification of the Line Coding Mode of Main E1

Key in 5 in Main E1 link setup menu and press the key Enter to enter into the selection of Main E1 line coding and the following menu pops out:

```
<<MainLINK Line Code SETTING>>
1. AMI              //AMI coding mode
*2. HDB3            //HDB3 coding mode
0. Exit             //exit
Please input your choice:
```

The current line coding mode of Main E1 can be browsed and the line coding mode effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.2.2.6 Browsing/Modification of the Receive Equalizer Gain Level of Main E1

Key in 6 in Main E1 link setup menu and press the key Enter to enter into the selection of Main E1 receive equalizer gain level and the following menu pops out:

```
<<MainLINK RXZ SETTING>>
*1. -12dB           //receive equalizer gain level: -12dB
2. -43dB            //receive equalizer gain level: -43dB
0. Exit             //exit
Please input your choice:
```

The current receive equalizer gain level of Main E1 can be browsed and the receive equalizer gain level of Main E1 effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.2.2.7 Browsing/Modification of the Depth of the Jitter Attenuation Buffer Area of Main E1

Key in 7 in Main E1 link setup menu and press the key Enter to enter into the selection of the jitter attenuation buffer area depth of Main E1 and the following menu pops out:

```
<<MainLINK Jitter Length SETTING>>
1. 32Bit            //jitter attenuation buffer area depth: 32bits
*2. 128Bit          //jitter attenuation buffer area depth: 32bits
0. Exit             //exit
Please input your choice:
```

The current jitter attenuation buffer area depth of Main E1 can be browsed and the jitter attenuation buffer area depth of Main E1 effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.2.3 Browsing/Modification of Sub E1 Setup Parameters

Key in 3 in E1 link setup menu and press the key Enter to enter into the browsing/correction of Sub E1 setup parameters and the following menu pops out:

```
<<Sub LINK SETTING>>
1. Frame/TS0 Pass   //Sub E1 framing mode browsing/correction menu
2. CRC-4            //Sub E1 frame CRC4 checking browsing/correction menu
3. LoopBack         //Sub E1 loop mode browsing/correction menu
4. Impedance        //Sub E1 line impedance mode browsing/correction menu
5. Line Code        //Sub E1 line coding mode browsing/correction menu
6. RXZ              //Sub E1 receive equalizer gain level browsing/correction menu
7. Jitter           //Sub E1 jitter attenuation buffer menu
8. Sub E1 Timeslot     //Sub E1 time slot selection and clearance menu
0. Exit             //exit
Please input your choice:
```

The setup content of the sub-menu is as follows:
Sub E1 framing mode browsing/correction: Four framing modes can be selected, namely CCS framing mode, CAS framing mode, CCS framing mode and 0 time slot unvarnished transmission work, CAS framing mode and 0 time slot transparent transmission work. (Note: no unframed work mode for ***ETU02-MUX/Plus*** E1)
Sub E1 frame **CRC4** checking browsing/correction: CRC4 checking forbidden or allowance can be selected.
Sub E1 **loop mode** browsing/correction: The options of no loop, E1 local loop and to-E1/to-opposite terminal loop can be selected to facilitate the diagnosis testing, among which the "no loop" is used in the normal work mode.
Sub E1 **line impedance** mode browsing/correction: Two kinds of line impedance matching modes can be selected for the application in 75Ω unbalanced coaxial cable and 120Ω balanced twisted pair line respectively.
Sub E1 **line coding** mode browsing/correction: Two kinds of line coding modes can be selected, namely HDB3 coding and AMI and coding.
Sub E1 **receive equalizer** gain level browsing/correction: Two kinds of line receive equalizer gain levels, namely -12dB and -43dB, can be selected for short line and long line application.
Sub E1 **jitter** attenuation buffer area depth browsing/correction: Two kinds of jitter attenuation buffer area depths, namely 128bits and 32bits, can be selected. The former is used for most occasions and the later is used for the occasions that are extremely sensitive to time delay.
Sub E1 **time slot selection** and clearance: The multiplexing of Sub E1 is consistent with that of other IO cards, any idle time slot can be selected and used at will, and the maximum rate of the multiplexing of Sub E1 is 1,984K (31 time slots). In this sub-menu, the time slot of Sub E1 can be cleared and established (see the following text for the detailed operation).
Key in any key from 1 to 8 and press the key Enter to enter into corresponding sub-menus.
Key in 0 and press the key Enter or press ESC to back to the previous menu.
The selection of Sub-menu 1 to 7 is totally consistent with the selection of Main E1 setup parameters and the setup mode and option are totally identical, so the unnecessary details would not be described here. See the section of Main E1 menu for the meanings of all options and only the time slot setup and clearance sub-menu of Sub E1 are introduced here.

4.2.3.1 Browsing/Modification of the Time Slot Setup of Sub E1

Key in 8 in the Sub E1 link setup menu and press the key Enter to enter into Sub E1 time slot setup/correction and the following menu pops out:

```
<<SubLINK Timeslot SETTING>>
Current Free Timeslot: 01-31     //the current free time slots are 1-31
Current SubE1 Timeslot: NULL     //the current Sub E1 work time slot is blank
Input SubE1 Timeslot:            //input format example: 1-10, 11, 15-20
Please input timeslot:           //the working time slot or group can be input
```

Firstly prompt the current idle time slots and make the list, and then prompt the current Sub E1 time slot and give the input format example for reference. Pay attention to the format that has been input. For example, in the interface in above figure, input 2-15 and press the key Enter, display after successful input that the current Sub E1 time slot is 02-15, and back to the previous menu.

Pointer: When being input, the time slots are spaced with the symbol "," and the time slots are put in order according to the serial numbers from small to large. The input should be free of the characters outside numbers, "," and "-" and the input should be ended with the pressing of the key Enter. If the input time slots have been occupied or the input format is wrong, the input should be repeated. After inputting ESC or inputting Enter in the position where the input of the time slot is prompted, back to the previous menu directly.

```
INPUT ERR INPUT AGAIN!     //the input is wrong or the format is wrong.
THE USED TIMESLOT: 01      //the input time slot is already occupied.
```

4.3 Setup of the I/O Card

Key in 2 in the previous menu and press the key Enter to enter into IO slot link parameters browsing/correction menu and check IO cards to display the numbers of the slots occupied by current IO cards:

```
IO LINK Configuration

Search....

Board NO.: 1, 2, 3  //the slot numbers of current IO cards or NULL when there is
                      no IO card in the slot

INPUT Board NO:

//Slot numbers of the selected IO cards and press the key Enter to enter into
corresponding IO cards setup. If there is no IO card at the input slot, the displaying
is as follows:

This NO. isn't exist!

Board NO.:1, 2, 3

INPUT Board NO:
```

//Input of the IO slot number and key in ESC or Enter in the current interface to back to the previous menu.
The following text shall describe the setup menus of all IO cards in detail.

4.3.1 Setup of N64K/V.35 Card

Key in the number of the N64K/V.35 located slot at the IO card setup input entry point and press the key Enter to check and display the current configuration information and the link status information of N64K/V35 card. For the description of the meanings of the specific information, see the following text about the description of the parameters setup and data link status information of N64K/V.35 card.

```
SLOT1 N64K/V.35 STATUS: Normal

Slot number    IO card type   IO card status

CH1: NULL, Internal CLK, NO Loop, DTR OFF, RTS OFF, Data Free

Time slot    clock mode    loop mode DTR signal    RTS signal    data    activation
signal

CH2: NULL, Internal CLK, NO Loop, DTR OFF, RTS OFF, Data Free
```

4.3.1.1 Display of N64K/V35 Menu

```
<<IO CONFIGURE--N64K/V.35>>
1.  CH1          //CH1 setup menu
2.  CH2          //CH2 setup menu
0.  Exit         //exit
Please input your choice:
```

Key in o and press the key Enter or key in ESC and press the key Enter to back to the selection of IO card interface.
Key in 1-2 and press the key Enter to enter into N64K/V.35 channel setup (the setup of Channel 1-2 identical)
Key in other keys and press the key Enter to back to the selection of IO card interface.

4.3.1.2 Display of N64K/V35 Channel Menu

In N64K/V35 setup menu status, select the setup channel (for example, channel 1) to set up the channel and the menu displays as follows:

```
<<IO CONFIGURE--N64K/V.35-CHANNEL 1>>
1. Timeslot        //setting up the multiplexing time slot number
2. Clock           //setting up the channel clock mode
3. Loop            //setting up the channel loop mode
0. Exit            //exit
Please input your choice:
```

Key in 0 and press the key Enter or key in ESC to back to the previous menu
Key in 1-3 and press the key Enter to enter into corresponding setup options
Key in other keys and press the key Enter to back to the previous menu

4.3.1.3 Setup of the Multiplexing Time Slot Number

Enter into the setup of the multiplexing time slot number selection menu where the E1 time slot multiplexed by this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--N64K/V.35-CHANNEL 1-TIMESLOT>>
Current Free Timeslot: 01-31
Current Timeslot: NULL
Please Input Timeslot:
```

One or more than one idle time slots (periods) can be input according to following input format:
The list of the time slots can include one or more than one continuous time slots and the format of the later is starting time slot – ending time slot;
After inputting the list of the idle time slots, press the key Enter to correct the confirmation and back to the previous menu.
If the input time slot has been occupied, the prompt is as follows:

```
THE USED TIMESLOT: XX      //displays the number of the occupied slots
INPUT ERR, INPUT AGAIN!    //the input is wrong and requires the repetition of the
                           input
```

If the format of the input time slot is wrong, only prompt the input error and back to the starting interface of the time slot input and require the repetition of the input of the time slot.
If there is no time slot input, press the key Enter or ESC to back to the previous channel setup menu.
Pointer: For N64K/V.35, every channel can use Time Slot 1-31 with the rate between 64K and 1984K.

4.3.1.4 Setup of the Clock Mode

Enter into the setup of the clock mode selection menu where the clock modes of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--N64K/V.35-CHANNEL 1-CLOCK>>
*1. Internal CLK        //the channel is internal clock mode.
2.  External CLK        //the channel is external clock mode.
0.  Exit                //exit
Please input your choice:
```

The current channel clock mode of N64K/V.35 can be browsed and the clock mode effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).
Pointer: The setting of the external clock is provided with meanings only when the interface is used as DTE. Now, 113-clock is used as the transmission clock to make the externally connected device use this device as the clock source. If the external mode is selected, the device uses 115-receving clock to sample the receive data 104.

4.3.1.5 Setup of the Loop Mode

Enter into the setup of the loop mode selection menu where the data loop mode of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--N64K/V.35-CHANNEL 1-LOOPBACK>>
*1. NO Loop
2.  Loop
0.  Exit
Please input your choice:
```

The current channel loop mode of N64K/V.35 can be browsed and the clock mode option effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.2 Setup of RS232 Card

Key in the number of the RS232 located slot at the IO card setup input entry point and press the key Enter to check and display the current configuration information and the link status information of RS232 card. For the description of the meanings of the specific information, see the following text about the description of the parameters setup and data link status information of RS232 card.

```
SLOT3  RS232  STATUS: Normal
Slot number    IO card type    IO card status
RS232 Card can work for the Independent Clock Mode
Description of the work mode of the current system:
CH1: NULL, Internal CLK, NO Loop, Async19.2K and Below, DTR OFF, RTS OFF, Data Free
Time slot    clock mode    loop mode work mode DTR signal    RTS signal    data activation signal
CH2:NULL,Internal CLK,NO Loop,Async19.2K and Below,DTR OFF,RTS OFF,Data Free
CH3:NULL,Internal CLK,NO Loop,Async19.2K and Below,DTR OFF,RTS OFF,Data Free
CH4:NULL,Internal CLK,NO Loop,Async19.2K and Below,DTR OFF,RTS OFF,Data Free
```

4.3.2.1 Display of RS232 Menu

```
<<IO CONFIGURE—RS232>>
1. CH1        //CH1 setup menu
2. CH2        //CH1 setup menu
3. CH3        //CH1 setup menu
4. CH4        //CH1 setup menu
0. Exit          //exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back to the IO card selection interface.
Key in 1-4 and press the key Enter to enter into RS232 channel setup (the setup of Channel 1-4 identical)
Key in other keys and press the key Enter to back to the selection of IO card interface.

4.3.2.2 Display of RS232 Channel Menu

In RS232 setup menu state, select the setup channel (for example, Channel 1) to set the channel and the menu display:

```
<<IO CONFIGURE—RS232-CHANNEL 1>>
1. Timeslot
2. Workmode
3. Loop
4. Clock
0. Exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back to the previous menu.
Key in 1-4 and press the key Enter to enter into corresponding setup options
Key in other keys and press the key Enter to back to the previous menu.

4.3.2.3 Setup of the Multiplex Time Slot Number

Enter into the setup of multiplexing time slot number selection menu where the multiplexed E1 time slot number can be selected and the following menu pops out:

```
<<IO CONFIGURE—RS232-CHANNEL 1-TIMESLOT>>
Current Free Timeslot: 01-31
Current Timeslot: NULL
Please Input Timeslot:
```

One or two idle time slots (periods) can be input and the input format is as follows:
One or two idle time slots can be input and the input
The list of the time slots can include one or more than one continuous time slots and the format of the later is starting time slot – ending time slot;
After inputting the list of the idle time slots, press the key Enter to correct the confirmation and back to the previous menu.
If the input time slot has been occupied, the prompt is as follows:

```
THE USED TIMESLOT: XX      //displays the number of the occupied slot
INPUT ERR, INPUT AGAIN! //the input is wrong and requires the repetition of the input
```

If the format of the input time slot is wrong, only prompt the input error and back to the starting interface of the time slot input and require the repetition of the input of the time slot. If there is no time slot number to be input, press the key Enter or ESC to back to the setup menu of the previous channel.

4.3.2.4 Setup of the Channel Operation Mode

Enter into the setup of channel work mode selection menu and the work mode of this channel can be selected. The following menu pops out. According to the difference of the work modes of the system, the channel work mode of RS232 card is provided with corresponding difference.

4.3.2.4.1 Description of the Channel Operation Mode of RS232 in Normal Mode

When the time slots are not distributed or a time slot is selected, the work mode selection menu is as follows:

```
<<IO CONFIGURE—RS232-CHANNEL 1-WORKMODE>>
*1. Async19.2K and Below    //the rate is asynchronous 19.2K or below.
2.  Sync 19.2K              //the rate is synchronous 19.2K.
3.  Sync 64K                //the rate is synchronous 64K
0.  Exit                    //exit
Please input your choice:
```

When two time slots are selected, the menu changes into the following format:

```
<<IO CONFIGURE—RS232-CHANNEL 1-WORKMODE>>
*1. Async38.4K and Below    //the rate is asynchronous 38.4K or below.
2.  Sync 38.4K              //the rate is synchronous 38.4K.
3.  Sync 128K               // the rate is synchronous 128K.
0.  Exit
Please input your choice:
```

The current RS232 channel work mode can be browsed and t he work mode option effectively selected at present is provided with the symbol * before.

Key in the effectively selected number (1-3) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.

Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.2.4.2 Description of the Channel Operation Mode of RS232 in Normal Mode

When the time slots are not distributed or a time slot is selected, the work mode selection menu is as follows:

```
<<IO CONFIGURE—RS232-CHANNEL 1-WORKMODE>>
*1. Async19.2K and Below                  //the rate is asynchronous 19.2K or below.
2.  Sync 9.6K (Independent Clock Mode)    //the rate is synchronous 9.6K -
independent external clock mode.
3.  Sync 64K                              //the rate is synchronous 64K.
0.  Exit                                  //exit
Please input your choice:
```

Note: Option 1 is that RS232 port works in the independent external clock mode.

When two time slots are selected, the menu changes as follows:

```
<<IO CONFIGURE—RS232-CHANNEL 1-WORKMODE>>
*1. Async38.4K and Below                  //the rate is asynchronous38.4K and below.
2.  Sync 19.2K (Independent Clock Mode)   //the rate is synchronous 19.2K –
independent external clock mode.
3.  Sync 128K                             // the rate is synchronous 128K.
0.  Exit
Please input your choice:
```

The current RS232 channel work mode can be browsed and the work mode option effectively selected at present is provided with the symbol *.
Key in the effectively selected number (1-3) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).
Pointer: For RS232, every channel is provided with 1-2 time slots and the corresponding work modes are 8.
When one time slot is selected, the following four work modes can be selected: asynchronous 19.2K and below, synchronous 19.2K, synchronous 64K and synchronous 9.6K in the independent external clock mode.

When two time slots are selected, the following work modes can be selected: asynchronous 38.4K and below, synchronous 38.4K, synchronous 128K, and the synchronous 19.2K in the independent external clock mode.

4.3.2.5 Setup of the Loop Mode

Enter into the setup of loop mode selection mode where the data loop mode of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--ASYNC128K-CHANNEL 1-LOOPBACK>>
*1. NO Loop          //no loop mode
2.  Loop             //data loop mode
0.  Exit             //exit
Please input your choice:
```

The current channel loop mode of RS232 can be browsed and the loop mode effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.2.6 Setup of the Clock Mode

Enter into the setup of the clock mode selection menu where the clock mode of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--ASYNC128K-CHANNEL 1-CLOCK>>
*1. Internal CLK        //the clock inside the channel
2.  External CLK        //the clock outside the channel
0.  Exit                //exit
Please input your choice:
```

The current clock mode of the channel of RS232 can be browsed and the clock mode effectively selected at present is provided with the symbol *.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).
Pointer: When the work mode is asynchronous, the setup of the channel clock is provided without significance. Only when the interface serves as DTE, the setup of external clock is significant. When being transmitted as DTE, 113-clock is used to make the externally connected device use this device as the clock source. If the external mode is selected, the device uses 115-receving clock to sample the receive data 104.

4.3.3 Setup of ET100 Card

In the IO card setup input entry point, key in the number of ET100 card located slot and press the key Enter to check and display the current setup information and link status information of ET100 card. For the description of specific information, see the description of the following text relating to ET100 card parameters setup and data link status information:

```
SLOT2  ET100  STATUS: Normal

Slot number    IO card type   IO card status

CH1: NULL, Aneg Enable, Full Duplex, 100M, Flowctrl Disable, MAC Filter Enable, NO
Loop

Time slot  adaptive mode  duplex mode  rate  flow control mode  address filtering
 allowance  loop mode

Link OFF, Data Free

Link status  data activation status

CH2:NULL,Aneg Enable,Full Duplex,100M,Flowctrl Disable,MAC Filter Enable,NO Loop
,Link OFF,Data Free
```

4.3.3.1 Display of ET100 Menu

```
<<IO CONFIGURE--ET100>>
3.   CH1          //CH1 setup menu
4.   CH2          //CH2 setup menu
0.   Exit         //exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back to the selection of IO card interface
Key in 1-2 and press the key Enter to enter into ET100 channel setup (the setup of Channel 1-2 identical)
Key in other keys and press the key Enter to back the IO card selection interface.

4.3.3.2 Display of ET100 Channel Menu

In ET100 setup menu status, select the set up channel (for example, Channel 1) to make channel setup and the menu displays as follows:

```
<<IO CONFIGURE--ET100--CHANNEL 1>>
1.  Timeslot                //setting the multiplexed time slot number
2.  Auto-Negotiation        //setting LAN port adaptive mode menu
3.  Communication Mode      //setting the communication duplex mode menu
4.  Speed                   //setting LAN port rate menu
5.  Flow Control            //setting flow control mode menu
6.  MAC Filtering           //setting the MAC address filtering allowance menu
7.  Local Loop              //setting channel loop mode menu
0.  Exit                    //exit
```

Please input your choice:

Key in 0 and press the key Enter or ESC to back the previous menu
Key in 1-7 and press the key Enter to enter into corresponding setup option
Key in other keys and press the key Enter to back to the previous menu

4.3.3.3 Setup of the Multiplex Time Slot Number

The time slot setup of ET100 is totally identical to that of N64K/V.35 and every channel can be provided with the setup of 1-31 time slots. The setup method and interface are both totally identical, so the unnecessary details are omitted here.
Pointer: For ET100, every channel can use 1-31 time slots and the rates corresponding to WAN are from 64K to 1,984K.

4.3.3.4 Setup of the Adaptive Mode of LAN Interface

Enter into the setup of LAN port adaptive mode selection menu and the LAN port adaptive mode of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--ET100--CHANNEL 1-Auto Negotiation>>
*1. Enable          //the LAN port adaptive mode work mode allowance of the channel
2.  Disable         // the LAN port adaptive mode work mode ban of the channel
0.  Exit            //exit
Please input your choice:
```

The current ET100 channel LAN port adaptive mode can be browsed and the clock mode option effectively selected at present is provided with the symbol * before. Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time. Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.3.5 Setup of Duplex Mode of the Communication

Enter into the setup of the communication duplex mode selection menu where the communication mode of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--ET100--CHANNEL 1-Communication Mode>>
*1. Full Duplex         //full duplex communication mode
2.  Half Duplex         //half-duplex communication mode
0.  Exit                //exit
Please input your choice:
```

The current ET100 channel communication duplex mode can be browsed and the clock mode option effectively selected at present is provided with the symbol * before. Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time. Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.3.6 Setup of the Speed of LAN Interface

Enter into the setup of LAN port rate menu where the LAN port rate of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--ET100--CHANNEL 1-Speed>>
*1. 100M                //LAN port rate: 100M
2.  10M                 //LAN port rate: 10M
0.  Exit                //exit
```

Please input your choice:

The current ET100 channel LAN port rate can be browsed and the LAN port rate option effectively selected at present is provided with the symbol * before. The current ET100 channel LAN port rate can be browsed and the LAN port rate option effectively selected at present is provided with the symbol * before. Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.3.7 Setup of Flow Control Mode

Enter into the flow control mode selection men where the flow control mode of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--ET100--CHANNEL 1-Flow Control>>
*1. Disable       //flow control disabled
2.  Enable        //flow control allowance
0.  Exit          //exit
Please input your choice:
```

The current ET100 channel flow control mode can be browsed and the flow control mode option effectively selected at present is provided with the symbol * before. Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.3.8 Setup of MAC Address Filtering

Enter into the setup of MAC address filtering menu where it can be selected whether the MAC address filtering of this channel can be allowed and the following menu pops out:

```
<<IO CONFIGURE--ET100--CHANNEL 1-MAC Filtering>>
*1. Enable        //MAC address filtering allowance
2.  Disable       //MAC address filtering off (transparent)
0.  Exit          //exit
Please input your choice:
```

It can be browsed whether the current ET100 channel MAC address filtering is allowed and the MAC address filtering option effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.3.9 Setup of the Channel Loop Mode

Enter into the setup of the loop mode selection menu where the data loop mode of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--ET100--CHANNEL 1-LOOPBACK>>
*1. NO Loop          //no loop mode
2.  Loop             //data loop mode
0.  Exit             //exit
Please input your choice:
```

The current ET100 channel loop mode can be browsed and the loop mode option effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.4 Setup of FXS Card

In the IO card setup input entry point, key in the number of FXS card located slot and press the key Enter to check and display the current setup information and link status information of FXS card. For the description of specific information, see the description of the following text relating to FXS card parameters setup and data link status information:

```
SLOT2  FXS  STATUS:Normal
Slot number   IO card type  IO card status
CH1:NULL,Hot Line,Interface Idle,CAS_Signaling Disconnect
Time slot  work mode  user interface status  CAS signaling status
CH2:NULL,Normal,Interface Idle,CAS_Signaling Disconnect
CH3:NULL,Normal,Interface Idle,CAS_Signaling Disconnect
CH4:NULL,Normal,Interface Idle,CAS_Signaling Disconnect
```

4.3.4.1 Display of FXS Menu

```
<<IO CONFIGURE--FXS>>
1. CH1          //CH1 setup menu
2. CH2          //CH2 setup menu
3. CH3          //CH3 setup menu
4. CH4          //CH4 setup menu
0. Exit         //exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back to the IO card selection interface
Key in 1-4 and press the key Enter to enter into FXS channel setup (the setup of Channel 1-4 identical)
Key in other keys and press the key Enter to back to the IO card selection menu.

4.3.4.2 Display of FXS Channel Menu

In FXS setup menu, select the set channel (for example, Channel 1) to set the channel and the menu displays:

```
<<IO CONFIGURE--FXS--CHANNEL 1>>
1. Timeslot         //setting the multiplexed time slot number
2. Workmode         //setting channel work mode
0. Exit             //exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back the previous menu
Key in 1-2 and press the key Enter to enter into corresponding setup option
Key in other keys and press the key Enter to back to the previous menu

4.3.4.3 Setup of the Multiplex Time Slot Number

Enter into the setup of multiplexed time slot number menu where the multiplexed E1 time slot number of this channel can be browsed and the following menu pops out:

```
<<IO CONFIGURE--FXS-CHANNEL 1-TIMESLOT>>
Current Free Timeslot: 01-31
Current Timeslot: NULL
Please Input Timeslot:
```

FXS can be input a idle time slot (period) only and the input format is as follows:
The list of the time slots can include single time slots. After inputting the idle time slots, press the key Enter to correct the confirmation and back to the previous menu.
If the input time slot has been occupied, the prompt is as follows:

```
THE USED TIMESLOT: XX      //the number of the occupied time slots
INPUT ERR,INPUT AGAIN! //the input is wrong and requires the repetition of the input
```

If the format of the input time slot is wrong, only prompt the input error and back to the starting interface of the time slot input and require the repetition of the input of the time slot.
If there is no time slot input, press the key Enter or ESC to back to the previous channel setup menu.
Pointer: For FXS, FXO and E&M, every channel can use one time slot with the rate of 64K.

4.3.4.4 Setup of the Channel Operation Mode

Enter into the setup of channel work mode selection menu where the work mode of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE--FXS--CHANNEL 1-Work Mode>>
1. Normal
*2. Hotline
0. Exit
Please input your choice:
```

The current FXS channel clock mode can be browsed and the clock mode option effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).
Pointer: Only FXS card is provided with the selection of work modes composed of hot line and normal work mode. When the hot line mode is selected as the relay through E1, the multiplexers at both sides adopt FXS card work mode and FXS connects with the hot line. When the normal mode is selected, both sides adopt FXS and FXO respectively to extend the relay distance of the line and connect with the exchange normally. The application of voice is provided with detailed specification for networking.

4.3.5 Setup of FXO Card

Key in the number of the FXO car located slot at the IO card setup input entry point and press the key Enter to check and display the current configuration information and the link status information of FXO card. For the description of the meanings of the specific information, see the following text about the description of the parameters setup and data link status information of N64K/V.35 card.

```
SLOT2  FXO  STATUS:Normal
Slot number   IO card type  IO card status
CH1:NULL,Interface Active,CAS_Signaling Disconnect
 time slot  user interface status  CAS signaling status
CH2:NULL,Interface Idle,CAS_Signaling Disconnect
CH3:NULL,Interface Idle,CAS_Signaling Disconnect
CH4:NULL,Interface Idle,CAS_Signaling Disconnect
```

4.3.5.1 Display of FXO Menu

```
<<IO CONFIGURE--FXO>>
1. CH1          //CH1 setup menu
2. CH2          //CH2 setup menu
3. CH3          //CH3 setup menu
4. CH4          //CH4 setup menu
0. Exit         //exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back to the IO card selection interface
Key in 1-4 and press the key Enter to enter into FXO channel setup (the setup of Channel 1-4 identical)
Key in other keys and press the key Enter to back to the IO card selection menu.

4.3.5.2 Display of FXO Channel Menu

In FXO setup menu status, select the set channel (for example, Channel 1) to make channel setup and the menu displays:

```
<<IO CONFIGURE--FXO--CHANNEL 1>>
1. Timeslot         //setting multiplexed time slot number
0. Exit             //exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back the previous menu

Key in 1 and press the key Enter to enter into time slot setup option

Key in other keys and press the key Enter to back to the previous menu

4.3.5.3 Setup of the multiplexed Time Slot Number

The setup of FXO time slot is totally identical to that of FXS and every channel is provided with one time slot. Unnecessary details are omitted here.

4.3.6 Setup of E&M Card

Key in the number of the E&M car located slot at the IO card setup input entry point and press the key Enter to check and display the current configuration information and the link status information of E&M card. For the description of the meanings of the specific information, see the following text about the description of the parameters setup and data link status information of E&M card.

```
SLOT1  E&M  STATUS:Normal

Slot number   IO card type  IO card status

CH1:NULL,TX_ Attenuation is 0dB,RX_ Gain is 0dB,Interface Idle,CAS_Signaling
Disconnect

Time slot  transmission gain  receiving attenuation  user interface status  CAS
signaling status

CH2:NULL,TX_ Attenuation is 0dB,RX_ Gain is 0dB,Interface Idle,CAS_Signaling
Disconnect

CH3:NULL,TX_ Attenuation is 0dB,RX_ Gain is 0dB,Interface Idle,CAS_Signaling
Disconnect

CH4:NULL,TX_ Attenuation is 0dB,RX_ Gain is 0dB,Interface Idle,CAS_Signaling
Disconnect
```

4.3.6.1 Display of E&M Menu

```
<<IO CONFIGURE--E&M>>
1. CH1          //CH1 setup menu
2. CH2          //CH2 setup menu
3. CH3          //CH3 setup menu
4. CH4          //CH4 setup menu
0. Exit         //exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back to the IO card selection interface
Key in 1-4 and press the key Enter to enter into E&M channel setup (the setup of Channel 1-4 identical)
Key in other keys and press the key Enter to back to the IO card selection menu.

4.3.6.2 Display of E&M Channel Menu

In E&M setup menu state, select the set channel (for example, Channel 1) to make the channel setup and the menu displays:

<<IO CONFIGURE--E&M--CHANNEL 1>>

1. Timeslot //setting multiplexed time slot number
2. Tx_Line Signal Level //setting channel transmission gain
3. Rx_Line Signal Level //setting channel receiving attenuation
0. Exit //exit

Please input your choice:

Key in 0 and press the key Enter or ESC to back the previous menu
Key in 1-3 and press the key Enter to enter into channel setup option
Key in other keys and press the key Enter to back to the previous menu
Pointer: The channel transmission side (TX) refers to the transmission direction of the signal that is received by E&M channel and then is transmitted to PCM interface.
The channel receiving side (RX) refers to the transmission direction of the signal that is received by PCM interface and then is transmitted to E&M channel.

4.3.6.3 Setup of the Multiplex Time Slot Number

The time slot setup of E&M is totally identical to that of FXS and every channel can be provided with one time slot. The unnecessary details are omitted here.

4.3.6.4 Setup of the Signal Level at the Side of TX

The level value at the middle point at the side of TX (the receiving side of E&M card line) is +5dB and the range of the relative value is ±7.5dB. The default is as follows and it is 0dB at the side of TX in the attenuation mode.

Enter into the setup of the signal level selection menu at the side of TX where the signal level of this channel at the side of TX can be selected and the following menu pops out:

```
<<IO CONFIGURE--E&M--CHANNEL 1-TX_Line Signal Level>>

1. Gain/Attenuation Select    // the level gain/attenuation at the side of TX
2. Range Select               //the selection of the relative value of the level
0. Exit                       //exit

Please input your choice:
```

Key in 0 and press the key Enter or ESC to back the previous menu
Key in 1-2 and press the key Enter to enter into the sub-menu setup option
Key in other keys and press the key Enter to back to the previous menu

4.3.6.4.1 Setup of the Selection of the Gain and Attenuation of the Signal Level at the Side of TX

Enter into the setup selection menu of the signal level gain and attenuation at the side of TX where it can be selected whether the signal level at the side of TX is gain or attenuation relative to the level at the middle point and the following menu pops out:

```
<<IO CONFIGURE--E&M--CHANNEL 1-TX_Line Gain/Attenuation Select>>

1. Gain Mode              //gain mode
*2. Attenuation Mode      //attenuation mode
0. Exit                   //exit

Please input your choice:
```

The current E&M level gain and attenuation selection at the side of TX can be browsed and the mode option effectively selected at present is provided with the symbol * before.
The current E&M level gain and attenuation selection at the side of TX can be browsed and the mode option effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.6.4.2 Setup of the Selection of the Relative Value of the Signal Level at the Side of TX

Enter into the setup selection menu of the signal level gain and attenuation at the side of TX where the relative value of the signal level gain/attenuation at the side of TX can be selected and the following menu pops out:

```
<<IO CONFIGURE--E&M--CHANNEL 1-TX_Line Level Range Select>>

Current channel TX_LineMode is Attenuation Mode  //the current channel level at
                                    the side of TX is in attenuation mode and the
                                    selection of the relative value of the level
                                    is as follows:

1.  +5.0dB
2.  +4.5dB
3.  +4.0dB
4.  +3.5dB
5.  +3.0dB
6.  +2.5dB
7.  +2.0dB
8.  +1.5dB
9.  +1.0dB
A.  +0.5dB
*B. +0.0dB
C.  -0.5dB
D.  -1.0dB
E.  -1.5dB
F.  -2.0dB
G.  -2.5dB
0.  Exit
Please input your choice:
```

The relative value of the E&M channel gain/attenuation at the side of TX can be browsed and the relative value of the level at the side of TX effectively selected at present is provided with the symbol * before.
Key in the effectively selected number (1—G) and then press the key Enter to redisplay this menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).
Pointer:

1) When the relative value option of the gain/attenuation at the side of TX is from A to G, A~G or a~g can be input;

2) For example: If 0dB is selected from the relative level value selection menu, the corresponding level gain at the side of TX is +5dB;

3) If the signal higher than +3dBm is input in the audio interface at the side of TX, saturation distortion would appear.

4.3.6.5 Setup of the Signal Level at the Side of RX

The range of the relative value at the side of RX (E&M card line transmission side) is ±7.5dB. The default is as follows and the level gain value at the side of RX is 0dB.

Enter into the setup of the signal level selection menu where the signal level of this channel at the side of RX can be selected and the following menu pops out:

```
<<IO CONFIGURE--E&M--CHANNEL 1-RX_Line Signal Level>>

1. Gain/Attenuation Select    // the level gain/attenuation at the side of RX
2. Range Select               //the selection of the relative level value
0. Exit                       //exit

Please input your choice:
```

Key in 0 and press the key Enter or ESC to back the previous menu
Key in 1-2 and press the key Enter to enter into the sub-menu setup option
Key in other keys and press the key Enter to back to the previous menu

4.3.6.5.1 Setup of the Selection of the Gain and Attenuation of the Signal Level at the Side of RX

Enter into the setup of the signal level gain and attenuation selection menu at the side of RX where it can be selected whether the signal level of this channel at the side RX is gain or attenuation relative to the level at the middle point and the following menu pops out:

```
<<IO CONFIGURE--E&M--CHANNEL 1-RX_Line Gain/Attenuation Select>>

*1. Gain Mode           //gain mode

2. Attenuation Mode     //attenuation mode

0. Exit                 //exit

Please input your choice:
```

The current E&M channel level gain and attenuation at the side of RX can be browsed and the mode option effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.3.6.5.2 Setup of the Selection of the Relative Value of the Signal Level at the Side the Channel RX

Enter into the setup of the signal level gain and attenuation relative value selection menu at the side of RX where the relative value of the signal level of this channel at the side of RX and the following menu pops out:

```
  <<IO CONFIGURE--E&M--CHANNEL 1-RX_Line Level Range Select>>
Current channel RX_LineMode is Gain Mode   //the current level at the side of RX
                                           is in gain mode and the selection of the relative
                                           level value is as follows:
1.  -5.0dB
2.  -4.5dB
3.  -4.0dB
4.  -3.5dB
5.  -3.0dB
6.  -2.5dB
7.  -2.0dB
8.  -1.5dB
9.  -1.0dB
A.  -0.5dB
*B. +0.0dB
C.  +0.5dB
D.  +1.0dB
E.  +1.5dB
F.  +2.0dB
G.  +2.5dB
0.   Exit
Please input your choice:
```

The relative value of the current E&M channel gain/attenuation at the side of RX and the relative value at the side of RX effectively selected at present is provided with the symbol * before.
Key in the effectively selected number (1—G) and then press the key Enter to redisplay this menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).
Pointer:

1) When the relative value option of the gain/attenuation at the side of RX is from A to G, A~G or a~g can be input;

2) For example: If 0dB is selected from the relative level value selection menu, the corresponding level gain at the side of RX is -5dB;

4.3.7 Setup of G703/64K Card

Key in the number of the G703/64K located slot at the IO card setup input entry point and press the key Enter to check and display the current configuration information and the link status information of G703/64K card. For the description of the meanings of the specific information, see the following text about the description of the parameters setup and data link status information of G703/64K card.

```
INPUT Board NO: 2

SLOT2  G703/64K  STATUS:Normal

Slot number   IO card type  IO card status

CH1:Signal loss,01 ,NO Loop

Signal status   time slot    loop mode
CH2: Signal loss, NULL, NO Loop
```

4.3.7.1 Display of G703/64K Menu

```
<<IO CONFIGURE-- G703/64K >>
1. CH1              //CH1 setup menu
2. CH2              //CH2 setup menu
0. Exit             //exit
Please input your choice:
```

Key in 0 and press the key Enter or ESC to back to the IO card selection interface
Key in 1-2 and press the key Enter to enter into G703/64K channel setup (the setup of Channel 1-2 identical)
Key in other keys and press the key Enter to back to the IO card selection menu.

4.3.7.2 Display of G703/64K Channel Menu

In G703/64K setup menu state, select the set channel (for example, Channel 1) to make the channel setup and the menu displays:

```
<<IO CONFIGURE--G703/64K--CHANNEL 1>>
1. Timeslot           //setting multiplexed time slot number
2. Loop             //setting the channel loop mode
0. Exit               //exit
Please input your choice:
```

Key in 1-2 and press the key Enter to enter into corresponding setup option。
Key in 0 and press the key Enter or ESC to back the previous menu.。

4.3.7.3 Setup of the Multiplex Time Slot Number

Enter into the setup of the multiplexed time slot number selection menu where the multiplexed E1time slot number of the channel can be selected and the following menu pops out:

```
<<IO CONFIGURE-- G703/64K--CHANNEL 1-TIMESLOT>>
Current Free Timeslot: 01-31
Current Timeslot: NULL
Please Input Timeslot:
```

An idle time slot can be input.
Input the list of the idle time slots and press the key Enter to correct the confirmation to back to the previous menu;
If the input time slot has been occupied, the prompt is as follows:
THE USED TIMESLOT: XX //displaying the number of the occupied time slots
INPUT ERR, INPUT AGAIN! ///prompting that the input is wrong and requiring the repetition of the input
If the format of the input time slot is wrong, only prompt the input error and back to the starting interface of the time slot input and require the repetition of the input of the time slot. If there is no time slot input, press the key Enter or ESC to back to the previous channel setup menu.
Pointer: For G703/64K, every channel can use one time slot with the rate of 64K.

4.3.7.4 Setup of the Loop Mode

Enter into the setup of the loop mode selection menu where the data loop made of this channel can be selected and the following menu pops out:

```
<<IO CONFIGURE-- G703/64K -CHANNEL 1-LOOPBACK>>
*1. NO Loop
2. Loop
0. Exit
Please input your choice:
```

The current G703/64K channel loop mode can be browsed and the clock mode option effectively selected at present is provided with the symbol * before.
Key in the effective number (1 or 2) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.4 Setup Parameters and Status of the Display System

Select 3 in the previous menu and press the key Enter to enter into the setup parameters and status information in the display system where the system parameters, E1 setup parameters and link status information, and current IO card setup parameters and status information are displayed successively. After the end of the displaying, back to the previous menu. Now, the displayed setup information is the setup information that has already stored and configured in the device, the displayed status information and the displayed status information is the newest status information and data link activation information that has been updated in real time. The following text shall brief the content and meanings of the system parameters, E1 card parameters and link information, and the displayed setup and status information of every IO card.

4.4.1 Description of the System Parameters

System Parameter: Main E1 Recovery CLK, NO SNMP

Above system information show s that the system clock is Main E1 recovery clock, the network management mode is no network management and the displayed system include system work clock, network management mode and network management parameters in turn. The network management modes include two kinds: no network management and SNMP network management. For the setup and display of SNMP network management information, the setup, display and usage mode are detailed in SNMP network management operation manual.
Pointer: The network management function is only a function that can be selected.

4.4.2 Description of the Parameters Setup and Link Status Information

```
E1 Link  2*E1  STATUS: Normal      //E1 card is 2*E1 card and E1 card works normally.
WorkMode: SubE1                    //E1 card work mode is Sub E1 work mode.
***Main E1***
Parameter:CCS&Ts0 Pass Disable,CRC4 Disable,NO Loop,HDB3,-12dB,75 Ohm,128Bit
       //Main E1 parameters information
Status  :Signal Loss,Frame Loss,Remote Frame Loss,AIS Normal
       //Main E1 link status information
***Sub E1***
Parameter: CCS&Ts0 Pass Disable,CRC4 Disable,NO Loop,HDB3,-12dB,75 Ohm,128Bit
       //Sub E1's parameters information
Status: Signal Loss,Frame Loss,Remote Frame Loss,AIS Normal
       //Sub E1's link status information
SubE1 Timeslot:NULL        //Sub E1 work time slot is blank.
```

Here, Main E1 parameters information expresses that Main E1 framing mode is CCS mode and 0 time slot without transparent transmission, CRC4 check is banned, there is no loop, the line coding is HDB3, the receive equalizer gain level is -12dB, the typical line impedance is 75 Ohm and the jitter attenuation buffer area depth of the line is 128bits. Main E1 link status information expresses that Main E1 link carrier signal is lost, the local frame is out of synchronous, the remote frame is out of synchronous, and AIS alarm is normal.
For Sub E1 parameters information and link status information, the meanings are identical to those of Main E1. The final part displays the work time slot of Sub E1 and the current work time slot is blank. If there is any corresponding work time slot, that is displayed.

4.4.3 Description of the Parameters Setup and Data Link Status Information of N64K/V.35 Card

```
SLOTx  N64K/V.35  STATUS:Normal
   //corresponding slot numbers, N64K/V.35 card type and normal work status
CH1: NULL,Internal CLK,NO Loop,DTR OFF,RTS OFF,Data Free
   //no time slot in the first channel of N64K/V.35 card, internal block mode, no
data loop, the loss of DTR and RTS signal through the line, no data activation trough
the line (transmitting or receiving data)
CH2:NULL,Internal CLK,NO Loop,DTR OFF,RTS OFF,Data Free
   //no working time slot in the second channel of N64K/V.35 card, internal clock
mode,的 no data loop, loss of DTR and RTS signal through the line and no data activation
through the line (transmitting or receiving data)
```

The sequence of the parameters displayed corresponding to every channel of N64K/V.35 card is work time slot, clock mode, loop mode, DTR signal status through the line, RTS signal status through the line and the data activation through the line in turn.

4.4.4 Description of the Parameters Setup and Data Link Status Information of ET100 Card

```
SLOTx  ET100  STATUS:Normal
    //displaying corresponding slot numbers, ET100 card type and normal work status.
CH1:NULL,Aneg Enable,Full Duplex,100M,Flowctrl Disable,MAC Filter Enable,NO Loop
    ,Link OFF,Data Free
    //displaying no work time slot in the first channel of ET100 card, MDIX
self-adaptation work mode, LAN port full duplex, 100M rate, no flow control, MAC
address filtering allowance, no link signal through the line, and no data activation
through the line (no LAN transmitted date)
CH2:NULL,Aneg Enable,Full Duplex,100M,Flowctrl Disable,MAC Filter Enable,NO Loop
    ,Link OFF,Data Free
    //displaying no work time slot in the second channel of ET100 card, MDIX
self-adaptation work mode, LAN port full duplex, 100M rate, no flow control, MAC
address filtering allowance, no LAN port loop, no link signal through the line, and
no data activation through the line (no LAN transmitted date)
```

The sequence of the parameters displayed corresponding to every channel of ET100 card is work time slot, self-adaptation work mode allowance or ban, duplex mode, LAN rate, flow control mode, MAC address filtering loop mode allowance or ban, loop mode, link status and the date activation through the line in turn.

4.4.5 Description of the Parameters Setup and Data Link Status Information of RS232 Card

```
SLOTx  RS232  STATUS:Normal
    //corresponding slot numbers, RS232 car type and normal work status
RS232 Card can work for the Independent Clock Mode
   //describes the current working mode of the system
CH1:NULL,Internal CLK,NO Loop,Async19.2K and Below,DTR OFF,RTS OFF,Data Free
    //display no working time slot in the first channel of RS232 card, internal clock
    mode, no data loop, Async19.2K and below default work mode, loss of DTR and RTS
    signal through the line, and no data activation through the line (transmitting
    or receiving data)
CH2:NULL,Internal CLK,NO Loop,Async19.2K and Below,DTR OFF,RTS OFF,Data Free
    //displays no working time slot in the first channel of RS232 card, internal clock
    mode, no data loop, Async19.2K and Below default work mode, loss of DTE and RTS
    signal through the line, and no data activation through the line (transmitting
    or receiving data)
CH3:NULL,Internal CLK,NO Loop,Async19.2K and Below,DTR OFF,RTS OFF,Data Free
    //displays no working time slot on the first channel of RS232 card, internal clock
    mode, no data loop, Async19.2K and Below default work mode, loss of DTE and RTS
    signal through the line, and no data activation through the line (transmitting
    or receiving data)
CH4:NULL,Internal CLK,NO Loop,Async19.2K and Below,DTR OFF,RTS OFF,Data Free
    //displays no working time slot in the first channel of RS232 card, internal clock
    mode, no data loop, Async19.2K and Below default work mode, loss of DTE and RTS
    signal through the line, and no data activation through the line (transmitting
    or receiving data)
```

The sequence of the parameters displayed corresponding to every channel of RS232 card is work time slot, clock mode, loop mode, work mode, DTR signal status through the line, RTS signal status through the line, and the data activation through the line in turn.

4.4.6 Description of the Parameters Setup and Data Link Status Information of FXO Card

```
SLOTx  FXO  STATUS:Normal
    //display corresponding slot numbers,  FXO card type and normal work status
CH1:NULL,Interface Idle,CAS_Signaling Disconnect
     //display no working time slot in the first channel of FXO card, idle interface
     and “Off” CAS signaling status
CH2:NULL,Interface Idle,CAS_Signaling Disconnect
    //displays no time slot in the second channel of FXO card, idle interface and
    “Off” CAS signaling status
CH3:NULL,Interface Idle,CAS_Signaling Disconnect
    //displays no working time slot in the third channel of FXO card, idle interface
    and “Off” CAS signaling status
CH4:NULL,Interface Idle,CAS_Signaling Disconnect
    //displays no working time slot in the fourth channel of FXO card, idle interface
    and “Off” CAS signaling status
```

The sequence of the parameters corresponding to every channel of FXO card includes work time slot, work mode type, user interface status and CAS signaling link status in turn.
Pointer: The work mode described by FXO refers to the normal work mode and preserved PCCW work mode. The normal work mode can complete normal work and the fault detection, fault up-load, fault down-load and fault containment of the signaling channel. Besides above normal functions, PCCW work mode increases the telephone connecting line channel backup function.

4.4.7 Description of the Parameters Setup and Data Link Status Information of FXS Card

```
SLOTx  FXS  STATUS:Normal
    //displays corresponding slot numbers, FXS card type and normal work status
CH1:NULL,Hot Line, Interface Idle,CAS_Signaling Disconnect
    //displays no working time slot in the first channel of FXS card, work in the
    hot line mode, idle user interface and “Off” CAS signaling status
CH2:NULL,Hot Line, Interface Idle,CAS_Signaling Disconnect
    //displays no working time slot in the second channel of FXS card, work in the
     hot line mode, idle user interface, and “Off” CAS signaling status
CH3:NULL,Hot Line, Interface Idle,CAS_Signaling Disconnect
    // displays no working time slot in the third channel of FXS card, work in the
    hot line mode, idle user interface, and “Off” CAS signaling status
CH4:NULL,Hot Line, Interface Idle,CAS_Signaling Disconnect
    // displays no working time slot in the fourth channel of FXS card, work in the
    hot line mode, idle user interface, and “Off” CAS signaling status
```

The sequence of the parameters displayed corresponding to every channel of FXS card includes work time slot, work mode type, work mode, user interface status and CAS signaling link status.
Pointer: The work mode described by FXS refers to the normal work mode and preserved PCCW work mode. The normal work mode can complete normal work and the fault detection, fault up-load, fault down-load and fault containment of the signaling channel. Besides above normal functions, PCCW work mode increases the telephone connecting line channel backup function.

4.4.8 Description of the Parameters Setup and Data Link Status Information of E&M Card

```
SLOT2  E&M  STATUS: Normal
   //displays corresponding slot numbers, E&M card type and normal work status
CH1:NULL,TX_Gain  is  0dB,RX_Attenuation  is  0dB,Interface  Idle,CAS_Signaling
Disconnect
   //displays no working time slot in the first channel of E&M card, 0dB transmission
   gain, 0dB receiving attenuation, idle user interface and "Off" CAS signaling
   status
CH2:NULL,TX_Gain  is  0dB,RX_Attenuation  is  0dB,Interface  Idle,CAS_Signaling
Disconnect
   // displays no working time slot in the second channel of E&M card, 0dB transmission
   gain, 0dB receiving attenuation, idle user interface and "Off" CAS signaling
   status
CH3:NULL,TX_Gain  is  0dB,RX_Attenuation  is  0dB,Interface  Idle,CAS_Signaling
Disconnec
   //displays no working time slot in the third channel of E&M card, 0dB transmission
   gain, 0dB receiving attenuation, idle user interface and "Off" CAS signaling
   status
CH4:NULL,TX_Gain  is  0dB,RX_Attenuation  is  0dB,Interface  Idle,CAS_Signaling
Disconnec
   // displays no work time slot in the fourth channel of E&M card, 0dB transmission
   gain, 0dB receiving attenuation, idle user interface and "Off" CAS signaling
   status
```

The sequence of the parameters displayed corresponding to every channel of E&M card includes work time slot, transmission gain, receiving attenuation, user interface status and CAS signaling link status.

4.4.9 Description of the Parameters Setup and Data Link Status Information of G703/64K Card

```
SLOT3   G703/64K   STATUS: Normal
   //displays corresponding slot numbers, G703/64K card type and normal working
status
CH1: Signal loss, NULL, NO Loop
   //displays the signal loss in the first channel of G703/64K card, no working time
slot and no data loop
CH2: Signal loss, NULL, NO Loop
   //displays the signal loss in the second channel of G703/64K card, no working
time slot and no data loop
```

4.5 Storage and Collocation of the Device Parameters

All parameters changed during operation in terminal menu only keep the parameters temporarily and the device parameters have not been really configured, so this option of the operation must be done to make real system configuration. Otherwise, the parameters would not be stored and the parameters change information would be lost after shutdown or power-down.

After keying in 4 in the previous menu and pressing the key Enter to prompt the storage and device configuration parameters confirmation, the following interface appears:

```
System will be configured, are you sure(Y/N)?     //prompting whether the system
needs to be stored and configured
```

After being prompted, key in "Y" or "y" and press the key Enter to store the parameters and begin to configure the system parameters.

The configuration process information is as follows:

```
Start configure,.....          //prompting that the parameters configuration is started and the parameters have been stored
```

The following displays the result of the parameters configuration: successful or unsuccessful

```
E1 SET OK!                  //prompts the successful E1 card configuration
SLOT1 SET OK!               //prompts the successful SLOT1 card configuration
SLOT2 SET OK!               //prompts the successful SLOT2 card configuration
SLOT3 SET OK!               //prompts the successful SLOT3 card configuration
```

4.6 Recovery of the Default Value of the Device

Key in 5 in the previous menu and press the key Enter to prompt the displaying of device parameters clearance and the recovery to factory default. The following interface appears:

```
You will Recover System to Default Value!
Are you sure(Y/N)?
```

After being prompted, key in "'Y" or "y" and press the key Enter to start the recovery of the default of the device. Once being started, the operation cannot be cancelled. The configuration recovery process information is as follows:

```
Start configure.......        //starting the recovery of the initial default of the parameters
```

The following is the displayed result of the recovery of the default of the parameters: successful or unsuccessful

```
E1 SET OK!                  //prompts the successful E1 parameters recovery
SLOT1 SET OK!               //prompts the successful SLOT1 parameters recovery
SLOT2 SET OK!               //prompts the successful SLOT2 parameters recovery
SLOT3 SET OK!               //prompts the successful SLOT3 parameters recovery
```

Pointer: In the default recovery setup of the device, recover the following options to the default.
E1 card parameters are recovered to the default, E1 work mode is unchanged and Sub E1 work time slot is reset.
IO card parameters are recovered to the default.
The system clock mode is recovered to Main E1 recovery clock.
At the same time, t ye network management setup parameters of the system is reserved, the system date and time are reserved, and the system password is reserved.

4.7 Browsing/Modification of the Equipment System Parameters

Key in 6 in the previous menu and press the key Enter to enter into the device system parameters browsing/correction menu. The displaying is as follows:

```
<<Set System>>
1. Version                  //displays the current system firmware version number
2. Master Timing            //system clock browsing/correction menu
3. SNMP Mode                //system network management parameters setup information browsing/correction menu
4. Change Password          //system password change menu
5. System Date              //system date browsing/correction
6. System Time              // system time browsing/correction
0. Exit                     //exit from the menu
Please input your choice:
```

Key in 1-6 and press the key Enter to enter into corresponding sub-menus
Key in 0 and press the key Enter or ESC to back to the previous menu

4.7.1 Display of the System Version Number

Display the current system version number (for example, V1.05)

```
*****Current version is 1.05*****
```

4.7.2 System Block Browsing/Modification Menu

Key in 2 in the device system parameters menu to enter into the system clock browsing/correction menu and the following menu pops out:

```
<<Master Timing>>
*1. MainLINK Timing
2. SubLINK Timing
3. INT OSC
4. DataPort Timing
0. Exit
Please input your choice:
```

The current clock system can be browsed and the system clock option effectively selected at present is provided with the symbol * before.
Key in the effectively selected number (1-3) and then press the key Enter to redisplay the menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).
After 4 has been keyed in, the displaying of the menu is different from other options: the menu firstly displays the IO clock slot number that can be used at present and prompts the input of IO clock slot number. The menu interface is as follows:

```
Current available DataPort:
SLOT1  N64K/V.35
SLOT2  RS232
Current Extclk Slot is:NULL
Please input your choice:
```

After inputting the effective external clock slot number and pressing the key Enter, the menu displays as follows:

Current Extclk Slot modified OK!!

Confirm that the setup parameters are correct and then back to the previous menu.

When the input external clock slot number is not effective at present, the menu displays as follows:

Current SLOT is not available!

Then keep the original parameters unchanged and back to the previous menu.

Press the key ESC in the external IO clock slot number selection sub-menu to back the previous menu (any parameter unchanged).

Pointer: When the device adopts IO card, only the clock of the first channel at the slot can be used as the system clock of the device. The cards that can provide the clock of the first channel as the system clock of the device include N64K/V.35 and RS232, among which RS232 doesn't provide in asynchronous work mode and multiple clock mode.

4.7.3 Browsing/Modification of the Parameters Setup Information of the System Network Management

Key in 3 in the device system parameters menu to enter into the system network management setup browsing/correction menu and the menu pops out as follows:

```
<<Set System--SNMP Configure>>

1. SNMP Mode            //SNMP network management function activation
2. TCP/IP Address       //SNMP network management related address setup
3. Manager Config       //SNMP network management parameters setup
0. Exit                 //exit
Please input your choice:
```

Key in 1-3 and press the key Enter to enter into corresponding sub-menus
Key in 0 and press the key Enter or ESC to back to the previous menu

4.7.3.1 Activation of the Functions of SNMP Network Management Functions

In **<<Set System--SNMP Configure>>** menu state, key in 1 to enter into SNMP network management function activation menu an the menu pops out as follows:

```
<<Set System--SNMP Configure--SNMP Mode>>

*1. SNMP Disable        //switching off SNMP network management function
2. SNMP Enable          //switching on SNMP network management function
0. Exit                 //exit
Please input your choice:
```

The current SNMP network management on/off status can be browsed and the option effectively selected at present is provided with the symbol * before.
Key in effective number (1-2) and then press the key Enter to redisplay this menu, but the position of the symbol * changes along with the change of the setup values. Confirm the changed parameters and back to previous menu at the same time.
Key in 0 and press the key Enter or ESC to back to the previous menu (no parameter changed).

4.7.3.2 Setup of the Involved Address Parameters of SNMP Network Management

In <<Set System--SNMP Configure>> menu state, key in 2 to enter into SNMP network management related address parameters setup menu and the following menu pops out:

```
<<Set System--SNMP Configure--TCP/IP Address>>

1. MAC Address          //SNMP network management interface MAC address setup
2. IP Address           //SNMP network management interface IP address setup
3. Subnet MASK          //sub network mask setup
4. Gateway IP           //gateway IP address setup
5. TFTP Server IP       //TFTP Server IP address setup
6. TFTP Path            //TFTP path setup
0. Exit

Please input your choice:
```

Key in 1-6 and press the key Enter to enter into corresponding sub-menus
Key in 0 and press the key Enter or ESC to back to the previous menu

4.7.3.2.1 Setup of the MAC Address at SNMP Network Management Interface

In <<Set System--SNMP Configure--TCP/IP Address>> menu, key in 1 to enter into gateway interface MAC address setup and the displaying is as follows:

```
<<Set System--SNMP Configure--TCP/IP Address--MAC ADDRESS>>

CURRENT  MAC ADDR:0c.11.22.33.44.55

INPUT NEW  MAC ADDR:
```

Input MAC address according to the prompt and press the key Enter to confirm. Directly press the key Enter or ESC to back to the previous menu (no parameter changed)

4.7.3.2.2 Setup of the IP Address at SNMP Network Management Interface
In **<<Set System--SNMP Configure--TCP/IP Address>>** menu, key in 2 to enter into network management interface IP address setup and the displaying is as follows:

<<Set System--SNMP Configure--TCP/IP Address--IP ADDRESS>>

CURRENT IP ADDR:192.168.010.010

INPUT NEW IP ADDR:

Input IP address according to the prompt and press the key Enter to confirm. Directly press the key Enter or ESC to back to the previous menu (no parameter changed)
4.7.3.2.3 Setup of the Sub-network Mask
In **<<Set System--SNMP Configure--TCP/IP Address>>** menu, key in 3 to enter into the network management interface IP address setup and the displaying is as follows:

<<Set System--SNMP Configure--TCP/IP Address--SUBNET_MASK>>

CURRENT SUBNET MASK: 255.255.255.000

INPUT NEW SUBNET MASK:

Input sub network mask according to the prompt and press the key Enter to confirm. Directly press the key Enter or ESC to back to the previous menu (no parameter changed)
4.7.3.2.4 Setup of the IP Address at the Gateway
In **<<Set System--SNMP Configure--TCP/IP Address>>** menu, key in 4 to enter into the gateway interface IP address setup and the displaying is as follows:

<<Set System--SNMP Configure--TCP/IP Address--Gateway IP>>

CURRENT GATEWAY IP: 192.168.010.001

INPUT NEW GATEWAY IP:

Input gateway IP address according to the prompt and press the key Enter to confirm. Directly press the key Enter or ESC to back to the previous menu (no parameter changed)
4.7.3.2.5 Setup of the IP Address of TFTP Server
In **<<Set System--SNMP Configure--TCP/IP Address>>** menu, key in 5 to enter into the gateway interface IP address setup and the displaying is as follows:

<<Set System--SNMP Configure--TFTP Server IP>>

CURRENT TFTP SERVER IP: 192.168.100.001

INPUT NEW TFTP SERVER IP:

Input TFTP Server IP address according to the prompt and press the key Enter to confirm. Directly press the key Enter or ESC to back to the previous menu (no parameter changed)
4.7.3.2.6 Setup of TFTP Route
In **<<Set System--SNMP Configure--TCP/IP Address>>** menu, key in 6 to enter into the gateway interface IP address setup and the displaying is as follows:

<<Set System--SNMP Configure--TFTP Path>>

CURRENT TFTP Path: c:

INPUT NEW TFTP Path:

Input TFTP path according to the prompt and press the key Enter to confirm. Directly press the key Enter or ESC to back to the previous menu (no parameter changed)
4.7.3.3 Setup of SNMP Network Management Parameters
In **<<Set System--SNMP Configure>>** menu, key in 2 to enter into the SNMP network management related address parameters setup menu and the following menu pops out:

<<Set System--SNMP Configure--Manager Config>>

```
1.  Access IP Address      //network management client-side IP address setup
2.  Community Read/Write   //SNMP read and write community character string
3.  Community Read Only    //SNMP read-only community character string
0.  Exit                   //exit
```

Please input your choice:

Key in 1-3 and press the key Enter to enter into corresponding sub-menus
Key in 0 and press the key Enter or ESC to back to the previous menu
4.7.3.3.1 Setup of the IP Address at the Client-side of Network Management
In **<<Set System--SNMP Configure--Manager Config >>** menu, key in 1 to enter into SNMP network management client-side IP address parameters setup menu and the following menu pops out:

```
<<Set System--SNMP Configure--Access IP Address>>
1. Access IP #1 192.168.010.004
2. Access IP #2 192.168.010.005
3. Access IP #3 192.168.010.006
4. Access IP #4 192.168.010.007
0. Exit
Please input your choice:
```

Key in 1-4 and press the key Enter to enter into corresponding client-side IP address setup and the specific setup is identical to that of network management IP address setup (see 4.7.3.2.2).
Key in 0 and press the key Enter or ESC to back to the previous menu

4.7.3.3.2 Setup of the Read-Write Community Character String of SNMP Network Management

In **<<Set System--SNMP Configure--Manager Config >>** menu, key in 2 to enter into the SNMPnetwork management read and write community character string parameters setup menu and the menu pops out as follows:

```
<<Set System--SNMP Configure--Community Read/Write>>
CURRENT COMMUNITY RD/WR:public
INPUT NEW COMMUNITY RD/WR:
```

Input write-read community character string according to the prompt and press the key Enter to confirm. Directly press the key Enter or ESC to back to the previous menu (no parameter changed)

4.7.3.3.3 Setup of the Read-only Community Character String of SNMP Network Management

In **<<Set System--SNMP Configure--Manager Config >>** menu, key in 3 to enter into SNMP network management read-only community character string parameters setup menu and the following menu pops out:

```
<<Set System--SNMP Configure--Community Read Only>>
CURRENT COMMUNITY RD ONLY:public
INPUT NEW COMMUNITY RD ONLY:
```

Input read-only community character string according to the prompt and press the key Enter to confirm. Directly press the key Enter or ESC to back to the previous menu (no parameter changed)

4.7.4 Modification of the System Password

In the device system parameters menu, key in 4 and press the key Enter to enter into the system password change menu and the following menu pops out. Input the current system password and press the key Enter:

```
Please input the old password:******
```

Input new system password and press the key Enter:

```
Please input the new password:******
```

Input the new system password again and press the key Enter:

```
Please input the new password to confirm it: ******
```

After above three steps have been correctly finished, the new password of the system becomes effective immediately. Please keep your password properly. If the old system password is incorrect in the input process or the two inputs of the password is not consistent, the menu shall prompt that the input is wrong and back to the input of old password. At any time in the process, you can press the key ESC to back to the previous menu.

4.7.5 Browsing/Modification of the System Date

In the device system parameters menu, key in 5 and press the key Enter to enter into the system date browsing/correction menu and the menu pops out as follows:

```
Current date is: ***2005-10-09***    //prints current system date

Input Format: year-month-date    //prints the format data of the system date
```

For Example, 05-01-01

```
Please input new date:           //prompts the input of the new system date
```

After being prompted to input new data, input the new date from 2000 to 2099. The user only needs to input 00~99 to express the year. If the input is wrong, the input error words are prompted. In this process, you can press the key ESC to back the previous menu.
Pointer: The input format must totally comply with the prompted format and the year, month and date occupy two characters respectively. Input the year, month and date successively, separate them with the symbol "-" and then press the key Enter to confirm.

4.7.6 Browsing/Modification of the System Date

In the device system parameters menu, key in 6 and press the key Enter to enter into the system time browsing/correction menu and the following menu pops out:

```
Current time is:***14:56:03**    //prints the current system time

Input Format: hour-minute-second    //prints the format data of the system time
```

For Example, 23-01-01

```
Please input new time:           //prompts the input of the new system time
```

After being prompted to input the new time, input the new time. The hour in the time is expressed with 24 hours system. For example, 0700 a.m. is expressed with 07 and 0700 p.m. is expressed with 19. The minute and second are expressed with the number from 00 to 59. . If the input is wrong, the input error words are prompted. In this process, you can press the key ESC to back the previous menu.
Pointer: The input format must totall comply with the prompted format and the hour, minute and second occupy two characters respectively. Input the hour, minute and second successively, separate them with the symbol "-" and then press the key Enter to confirm.

4.8 Exit from the Menu and Entry into the Monitor Mode

After keying in 0 and pressing the key Enter in the previous menu, the system enquires whether the menu is exited from. Press the key "Y" or "y" to exit from the menu and enter into the monitoring state.

```
Exit Menu, (Y/N)?Y
```

4.9 Introduction of Event and Alarm Classification

When the terminal device is connected, all kinds of alarm information and time information can be reflected. The device indicator light is provided with "Alarm". The alarm lamp of the device lights up once when the system gives an alarm and the alarm lamp goes out when the system works normally.
In the real time monitoring state, the reflected events and alarm information include following types:
The plugging-in and drawing-out of E1 and IO card (for ***ETU02-MUX/Plus***, the card can be plugged in or drawn out, but it is not advocated)
The reflection of the change whether E1 card is in the normal work mode or gives an alarm
The loss and norm of Main E1 and Sub E1 link signal carrier wave, the local frame synchronization and loss-of-asynchronization information, the remote frame synchronization and loss-of-asynchronization information, and AIS alarm and normal information reflection

5. Diagnostics

5.1 E1 Port

5.1.1 Local Self-loop

Loop back to the local from E1 port.

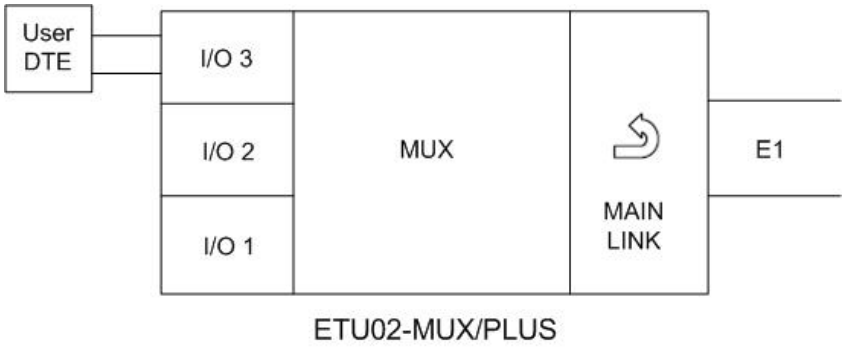


Figure 5.1 Local loop

5.1.2 Loop to the Remote Terminal

Loop to the remote end from E1 port.

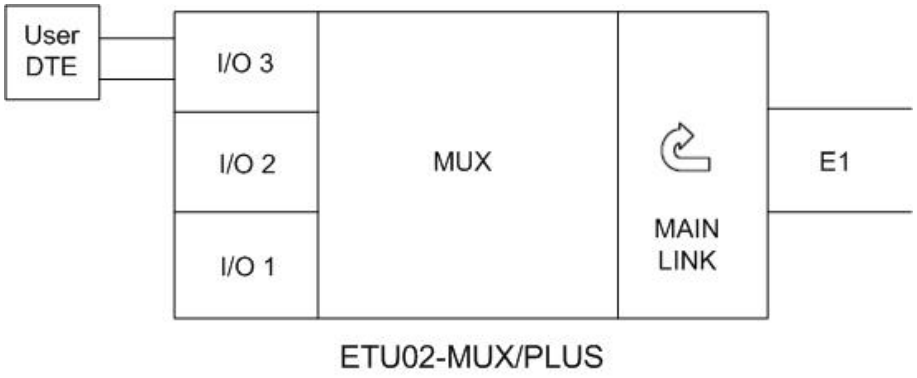


Figure 5.2 Loop to the remote end

5.1.3 Alarm Instruction of the Line

LED indication on the front panel of E1 card prompts the work mode of E1 line as follows:
Signal Loss Red，the lighting expresses that E1 line is without signal.
Sync Loss Red，the lighting expresses that E1 line is out of synchronization.
Alarm Red，the lighting expresses that E1 line is giving an alarm.

5.2 Interface of N64K-V.35/RS232/G703/64K Module

Through the programmable setup, the local loop and the loop to the remote end can be formed at the interface.
In the menu interface/SNMP user interface, the interface link status can be observed.

5.3 Interface of ET100 Module

Through the programmable setup, the loop to LAN can be formed at the interface.
In the menu interface/SNMP user interface, the interface link status can be observed.

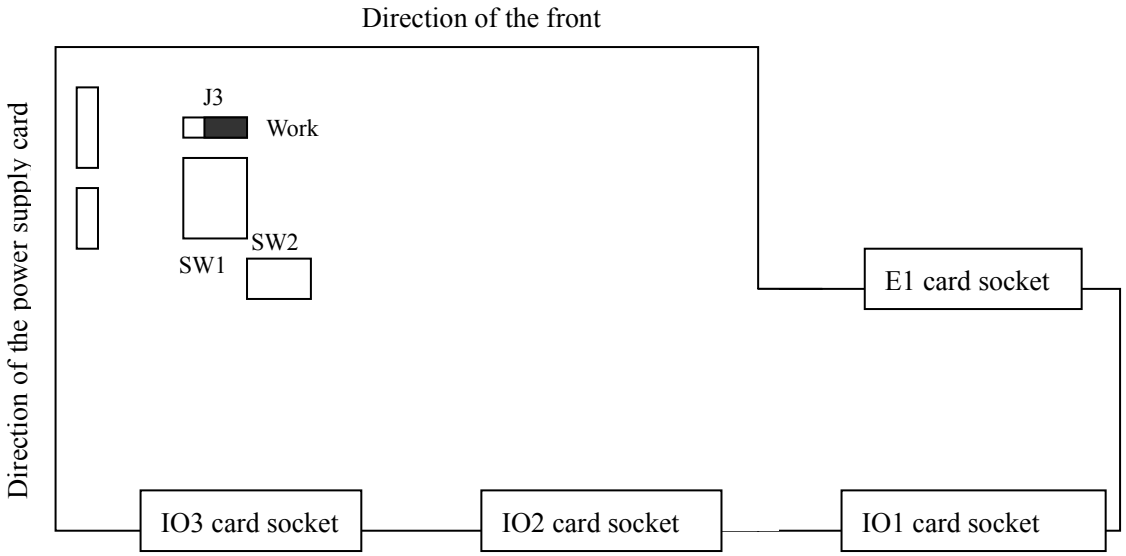
5.4 Interface of FXS/FXO/E&M Module

In the menu interface/SNMP user interface, the status of the signaling link from the local port to the remote end through E1 line can be observed.

Annex A: Setup of DIP Switch

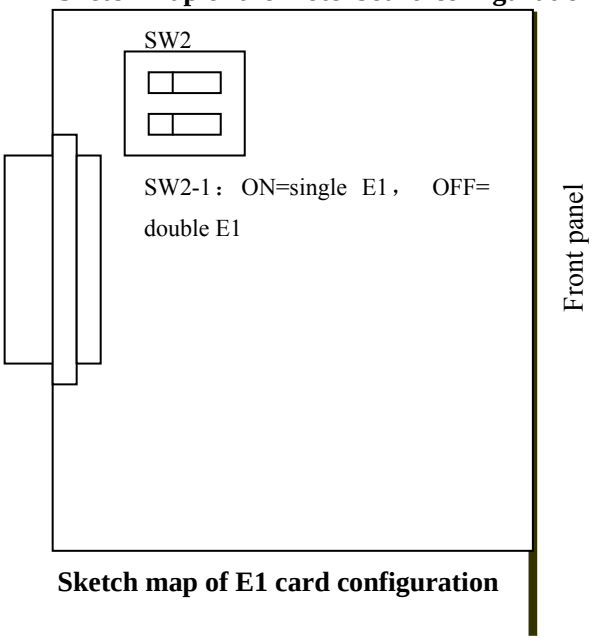
1. Motherboard

Jumper J3 should be connected to “WORK” position as the figure shows.
SW1/SW2 switch should be set at “OFF” position.



2. E1 Card

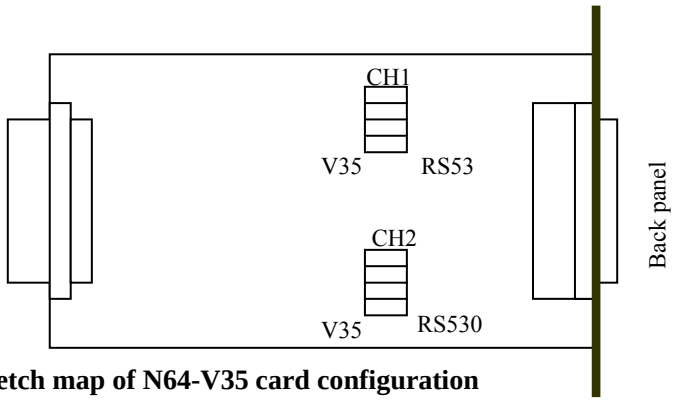
Sketch map of the moterboard configuration



Sketch map of E1 card configuration

3. N64-V35 Card

Every line is provided with 4 Jumpers and V35 or RS530 interface mode can be selected as the following figure shows:

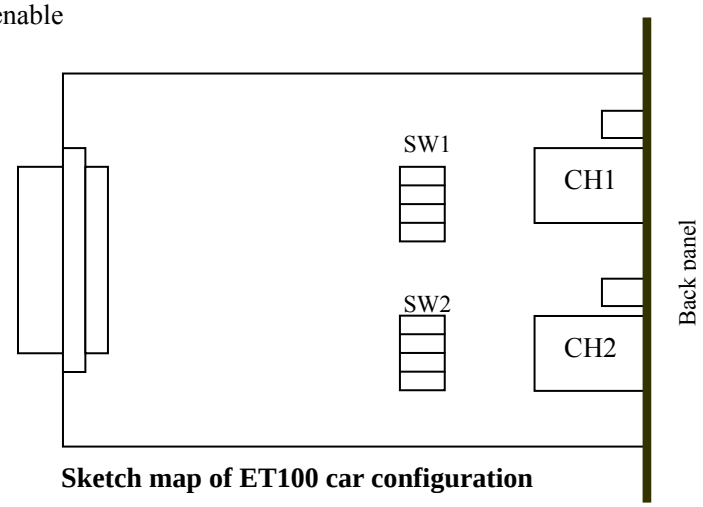


Sketch map of N64-V35 card configuration

Note: RS449 and X.21 are both placed at the side of RS530.

4. ET100 Card

SW1 sets up CH1 and SW2 sets up CH2:
SW-1: MDIX selection
ON: AUTO-MDIX enable
OFF: MDI mode



Sketch map of ET100 car configuration

Table of corresponding RJ45 pin-out positions

MDI	MDIX
1. TX+	1. RX+
2. TX-	2. RX-
3. RX+	3. TX+
6. RX-	6. TX-

SW-2，SW-3: Memory configuration

ON ON: LAN TO WAN 308 packages, WAN TO LAN 32 packages.

ON OFF: LAN TO WAN 170 packages, WAN TO LAN 170 packages.

OFF ON: LAN TO WAN 32 packages, WAN TO LAN 320 packages.

OFF OFF: No definition

SW-4: Reserved

5. E&M Card

5.1 Setup of the Voice Line

In the following figure, 2W represents 2-line mode and 4W does 4-line mode (voice level gain/attenuation can be configured with program).

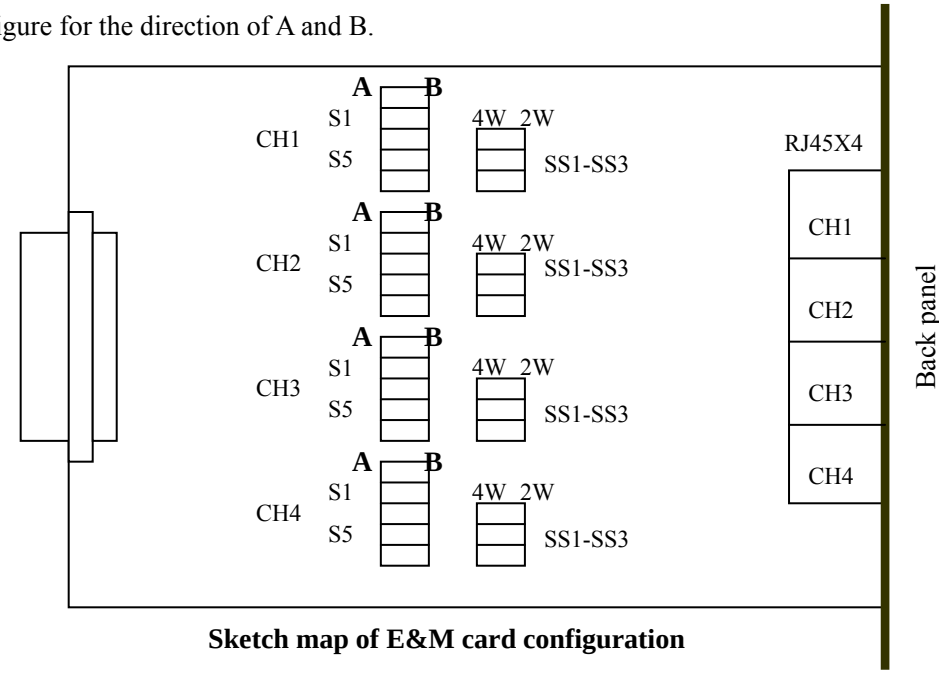
5.2 E&M Signaling Setup

In the following figure, S1-S5 selects the setup at the side of A, B or C, among which C expresses disconnection (see the following table).

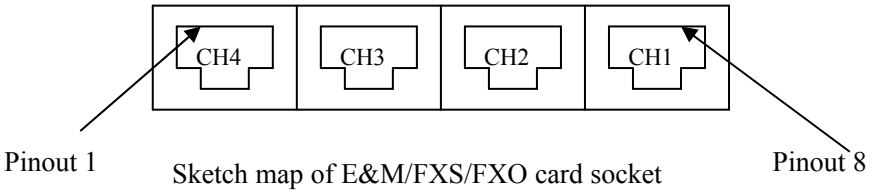
Signaling mode setup and voice line mode setup

		Jumper setup						
Jumper	Selection	Type 1	Type 2	Type 3	Type 4	Type 5	2-line	4-line
S1	SB line	**C**	**A**	**A**	**B**	**C**	-	-
S2	Tip	**A**	**B**	**A**	**B**	**A**	-	-
S3 S4 S5	M line property	**B**	**B**	**B**	**A**	**A**	-	-
SS1 SS2 SS3	2/4 lines selection	-	-	-	-	-	**2W**	**4W**

Note: A expresses the connection to the side of A, B expresses the connection to the side of B, and C expresses disconnection.
See the following figure for the direction of A and B.



Sketch map of E&M card configuration



Sketch map of E&M/FXS/FXO card socket

6. **FXS card (this card needing no configuration)**
7. **FXO card (this card needing no configuration)**
8. **RS232 card (this card needing no configuration)**
9. **G703/64K card (this card needing no configuration)**

Annex B: I/O Card Cable Interface Pin Assignments

1. Definition of the Pin-out of DB9 Straight-through Cable

DB9	Definition of the signal	Direction
2	**TD**	**OUTPUT**
3	**RD**	**INPUT**
5	**GND**	**--**

2. Definition of RJ45 Pin-out in the E1 Card Balanced Mode

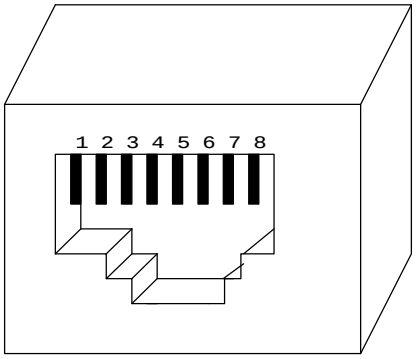
RJ45	Definition of the signal	Direction
1	**RD+**	**INPUT**
2	**RD-**	**INPUT**
4	**TD+**	**OUTPUT**
5	**TD-**	**OUTPUT**
7	**PGND**	**-----**
8	**PGND**	**-----**

3. Definition of RJ45 Pin-out of G703/64K Card

RJ45	Definition of the signal	Direction
1	**RD+**	**INPUT**
2	**RD-**	**INPUT**
3	**TD+**	**OUTPUT**
4	**TD-**	**OUTPUT**
7	**PGND**	**-----**
8	**PGND**	**-----**

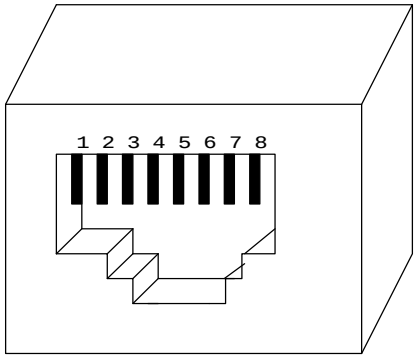
4. V1.0 Cable Pin-out Position of ET100 Card

RJ45	MDI	MDIX
1	TX+	RX+
2	TX-	RX-
3	RX+	TX+
6	RX-	TX-



5. V.10 Cable Pin-out Position of FXS Card

RJ45	Definition of the signal
4	LINE A
5	LINE B



6. V.10 Cable Pin-out Position of FXO Card

RJ45	Definition of the signal
4	LINE A
5	LINE B

7. V.10 Cable Pin-out Position of E&M Card

RJ45	Definition of the signal
1	4W (send to E1)/2W LINE A
2	4W (send to E1)/2W LINE B
3	4W (receive from E1)
4	4W (receive from E1)
5	E-LINE (signaling-output)
6	M-LINE (signaling-input)
7	SG (Signaling Ground)
8	SB (Signaling Battery)

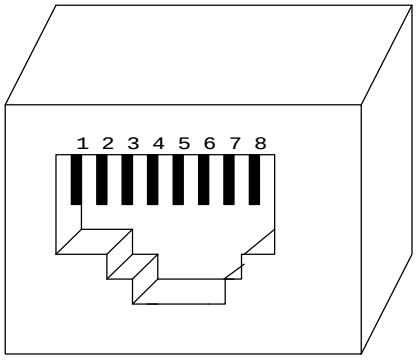


Figure of RJ45 socket pin-out positions

8. Table of V.10 Cable Pin-out Positions of N64-V35 Card (External DTE)

SCI68 (M)	DB25/F (1)	Definition of the signal
7	2	TDA
8	14	TDB
1	3	RDA
2	16	RDB
15	4	RTSA
16	19	RTSB
11	5	CTSA
12	13	CTSB
68	6	DSRA
67	22	DSRB
51	7	GND
52	7	GND
13	8	CDA
14	10	CDB
5	15	TCA
6	12	TCB
3	17	RCA
4	9	RCB
66	20	DTRA
65	23	DTRB
9	24	ETCA
10	11	ETCB
	DB25/F (2)	
25	2	TDA
26	14	TDB
19	3	RDA
20	16	RDB
33	4	RTSA
34	19	RTSB
29	5	CTSA
30	13	CTSB
49	6	DSRA
48	22	DSRB
52	7	GND
51	7	GND
31	8	CDA
32	10	CDB
23	15	TCA
24	12	TCB
21	17	RCA
22	9	RCB
47	20	DTRA
46	23	DTRB
27	24	ETCA
28	11	ETCB

9. Table of V.10 Cable Pin-out Positions of RS-232 Card (External DTE)

SCI68 (M)	DB25/F (1)	Definition of the signal
35	2	TD
7	3	RD
8	4	RTS
4	5	CTS
3	6	DSR
65	7	GND
6	8	CD
36	15	TC
1	17	RC
5	20	DTR
2	24	ETC
	DB25/F (2)	
9	2	TD
17	3	RD
18	4	RTS
14	5	CTS
13	6	DSR
61	7	GND
16	8	CD
10	15	TC
11	17	RC
15	20	DTR
12	24	ETC
	DB25/F (3)	
19	2	TD
27	3	RD
28	4	RTS
24	5	CTS
23	6	DSR
47	7	GND
26	8	CD
20	15	TC
21	17	RC
25	20	DTR
22	24	ETC
	DB25/F (4)	
29	2	TD
68	3	RD
67	4	RTS
66	5	CTS
32	6	DSR
39	7	GND
33	8	CD
30	15	TC
64	17	RC
34	20	DTR
31	24	ETC

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